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Weihai city as a case study

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ABSTRACT

Liu, L. (2008): Status and prospects for urban green structure planning in China – Weihai city as a case study. Forest & Landscape Research No. 41-2008. Forest & Landscape, University of Copenhagen, Frederiksberg. 302 pp.

China is experiencing rapid urbanisation. This puts enormous pressure on the country's environment and natural resources. During this process, urban green space has come to be widely recognised as contributing to improved environmental conditions and increasing the quality of life in cities. Accordingly, urban green space planning is receiving increased attention in China through a procedure called urban green (space) system planning.

This study's objective was to identify the key issues, challenges and potential improvements of urban green space planning and development in China. The international discourse on urban green space planning for sustainable development, and the European green structure planning approach, in particular, have been used as a framework for this research because they provide lenses for studying urban green space planning and development in China. Four principles were identified as key elements of current western theories of urban green structure planning. These are multi-functionality, integration, communication and strategic approach. Based on these principles, an analytical framework was derived for the study of urban green space planning, providing a theoretical basis for the investigation and analysis. In addition, an overview of Chinese socio-cultural background and relevance of the country's current national policies and planning system for the urban greening issue provided specific context for this study.

Weihai city was selected as a case city for the study because it has been designated as a National Garden City due to its advanced urban greening status. I assumed that studying Weihai would provide interesting insights into the potential of the green system planning approach. Urban green space planning and development at the city level was the main unit of analysis. In addition, eleven urban green space development projects were selected as sub-cases for developing in-depth understanding of key greening issues. The investigation analysed the goals, stakeholders and processes, and the outcomes and impacts of urban green space planning in Weihai. This analysis was based on planning document scrutiny, semi-structured interviews with key stakeholders, field visits and observations.

Findings showed that urban green space planning and development is an important and integrative part of urban development in Weihai. The strong emphasis on urban greening can be clearly seen in urban policy, planning and development practice. Although with distinct Chinese characteristics, some discourses on statutory planning (e.g. related to multi-functionality and integration) parallel current international discourse. However, there is a clear

gap between statutory planning and urban green space planning and development practice in Weihai. Within the context of general Chinese urban development, the planning system and cultural background, several underlying issues that cause this gap may be identified. These include cultural influence on green space design, the phenomenon of city branding for the pursuit of city competitiveness, the political leaders' important role in decision making, tensions between the top-down political system and the market economic system, and the strong pursuit of economic growth.

The study concludes that the Chinese urban green system planning approach has its own strengths, which should be acknowledged and respected. But the embedded mechanism of top-down planning intertwined with Chinese culture and the complex social-political context form barriers that stand in the way of sustainable urban green space planning in China.

My study calls for an improvement of the green space planning approach through: a) consideration of the multi-functionality of urban green space at lower, as well as higher, planning levels; b) increasing the physical connection between urban green spaces and the integration of the planning concepts at different planning levels; c) gradually promoting an open planning system with stakeholder involvement and public participation; and d) more balanced considerations of ecological, social and economic components from a long-term perspective of sustainable development. Recommendations are provided for the improvement of urban green space planning in Weihai, and for the adaptation of the Chinese urban green system planning approach to better suit present conditions. The study also calls for future research in support of green space planning in order to provide basic information about green spaces, their characteristics and use, to identify and study good practices, and to develop tools to support planning, development and management of green spaces in Chinese cities.

Keywords: Urban green structure, urban green (space) system, urban green space, planning, development, China, case study.

DANISH ABSTRACT

Liu, L. (2008): Status and prospects for urban green structure planning in China – Weihai city as a case study. Forest & Landscape Research No. 41-2008. Forest & Landscape, University of Copenhagen, Frederiksberg. 302 pp.

Kina oplever en hurtig urbanisering, hvilket lægger et meget stort pres på miljøet og landets naturressourcer. I forbindelse med denne proces er grønne områder i byen blevet anerkendt som et væsentligt bidrag til forbedring af de miljømæssige forhold og livskvaliteten i byerne. Som følge heraf har planlægning af grønne områder i byen opnået en øget opmærksomhed i Kina gennem en planlægningsstrategi, kaldet ”urban green (space) system planning”.

Formålet med nærværende studie var, at identificere grundlæggende problemstillinger, udfordringer og mulige forbedringer af planlægning og udvikling af byens grønne områder i en kinesisk kontekst. Den internationale interesse for bæredygtig udvikling i forhold til planlægning af grønne områder i byen, og især de europæiske metoder til grøn struktur planlægning, har dannet rammerne for dette forskningsarbejde, og bruges som indgangsvinkel til at studere planlægning og udvikling af bymæssige grønne områder i Kina. Fire principper blev lokaliseret som hovedelementer i den vestlige verdens aktuelle teori om grøn struktur planlægning i byen: Multi-funktionalitet, integration, kommunikation og strategisk tilgang. Baseret på disse principper blev der dannet en analytisk ramme for et studie af planlægning af grønne områder i byen, som skabte et teoretisk grundlag for nærværende undersøgelse og analyse. En oversigt over den kinesiske socio-kulturelle baggrund, og en undersøgelse af betydningen af landets nuværende nationale politik og planlægningssystem for grønne problemstillinger i byen, har skabt det specifikke indhold af dette studium.

Byen Weihai blev valgt som case til undersøgelsen, idet den er udnævnt til ”National Have By” på grund af dens høje status inden for urban greening, og derfor må antages at kunne give et interessant indblik i hvilke muligheder et planlægningssystem for grønne områder kan give. Planlægning og udvikling af grønne områder på byniveau var den primære analyseenhed. Derudover blev elleve udviklingsprojekter inden for grønne områder i byen valgt som under-cases for at få en mere dybdegående forståelse for grønne nøgleproblematikker. Mål, interessenter, processer, samt resultaterne og påvirkninger af en grøn planlægning i Weihai blev analyseret. Analysen var baseret på en gennemgang af planlægningsdokumenter, interviews med nøgleinteressenter, feltbesøg og observationer.

Det viste sig, at planlægning og udvikling af grønne områder i byen er en vigtig og integreret del af byudviklingen i Weihai. At der lægges stor vægt på grønne områder i byen, ses tydeligt på den måde byen i praksis udfører

sin byudviklings- og planlægningspolitik. Selv om der er tydelige kinesiske kendetegn, er der en del sammenfald mellem international og kinesisk lovgivning på planlægningsområdet (f.eks. i forhold til multi-funktionalitet og integration). Der er dog stadig langt fra det rent lovgivningsmæssige til den egentlige udførelse i praksis i Weihai. I relation til den almene kinesiske byudvikling, planlægningssystemet samt den kulturelle baggrund, kan et antal årsager til denne afstand identificeres. Disse inkluderer kulturel indflydelse på selve designet af grønne områder, fænomenet "City branding" (som har til hensigt at øge konkurrencedygtigheden mellem byerne), de politiske lederes vigtige rolle i beslutningsprocesserne, spændinger mellem det topstyrede politiske system og markedsøkonomien, samt en stærk stræben efter økonomisk vækst.

Undersøgelsen konkluderer, at de kinesiske tiltag på området har deres styrke, som bør anerkendes og respekteres. Men de medfølgende mekanismer af topstyret planlægning blandet med kinesisk kultur og den komplekse social-politiske sammenhæng danner barrierer, som står i vejen for en bæredygtig planlægning og udvikling af byens grønne områder i Kina.

I studiet efterspørges en række forbedringer af tilgangen til planlægning af byens grønne områder: a) øget hensyntagen til multi-funktionaliteten i planlægning af byens grønne områder – på lavere såvel som højere planlægningsniveauer, b) forbedring af de fysiske forbindelser mellem byens grønne områder, samt integration af de forskellige planlægningskoncepter på forskellige planlægningsniveauer, c) gradvis fremme af et åbent planlægningssystem med involvering af interessenter såvel som offentligheden, samt d) mere afbalancerede hensyn til økologiske, sociale og økonomiske komponenter set i et langsigtet perspektiv for den bæredygtige udvikling. Anbefalingerne er givet med henblik på at forbedre planlægningen af byens grønne områder i Weihai og for at tilpasse de kinesiske tiltag på området til de nuværende betingelser. Studiet opfordrer også til fremtidig forskning på området med henblik på at tilvejebringe grundlæggende information om grønne områder (deres karakteristika og brug), at belyse og undersøge god praksis, samt udvikling af værktøjer til at understøtte planlægning, udvikling og forvaltning af grønne områder i kinesiske byer.

PREFACE AND ACKNOWLEDGEMENTS

Motivation for this PhD study emerged by the end of my Master's study at the former Royal Veterinarian and Agriculture University, Denmark. The assignment of my Master's thesis was a park design for the site of an earlier salt industry in a new 'Economic Development Zone' of the Chinese city Tianjin. The authority of the Zone wanted to have a forest park at the site. I provided a proposal for a conceptual 'forest park'. Close to the completion of my Master's thesis, I was told that the authority of the Zone has changed its ideas completely and considered developing a golf course on the site. Fortunately for my Master's degree, I do not have to do it all over again.

However, this event, together with observations of other challenges to urban green space development in China, urged me to think more seriously about the argumentation behind urban green space planning and design, instead of simply designing an urban green space according to an assignment by the authority. In searching for good concepts and arguments, I got to know a series of urban green space planning concepts (e.g. park system, green belt, greenways etc.). At that time, I was mainly fascinated by Olmsted's park system in Boston, which provides identity and many functions for the city, and at the same time it provides meanings and arguments for each green space. As my knowledge of urban green space planning expanded, I became familiar with more aspects of urban green space planning, especially from the planning process perspective. The concept of urban green structure planning in Europe has been inspirational for this PhD dissertation.

For me, it has been an intensive learning process, more challenging than I expected. For my own edification, I have broadened my views from those of a landscape designer dealing mainly with aesthetic and technical matters of rather small-scale spaces to a (landscape) planner considering various aspects and processes for a large-scale space like a city. Importantly, as a PhD student continuously urged by the rigorous European approach of reasoning, and based on the existing knowledge of green structure planning in Europe, I have learned to reflect on the phenomenon of urban green space planning and development in my own country, China.

I am grateful for the opportunity granted to me by the former Royal Veterinarian and Agriculture University, Denmark (now the Faculty of Life Science, University of Copenhagen) for doing this study. I am also grateful to the Danish Centre for Forest, Landscape and Planning and especially my department, Department of Park and Urban Landscapes, for providing me with an inspiring working environment with growing interests on international developments, especially in China. I owe a lot to the professors, researchers and support staff in universities and research institutes in both Denmark and China who have made this study possible, as well as to the

actors of urban green space planning and development in Weihai who provided valuable information and support for this study. Some people deserve my extra thanks:

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provided valuable information in order to draw a whole picture of green space planning at the city level.

I owe a lot to my dear family and friends in China and in Denmark who have continuously given me care and mental support. My friends Jie Zhang and Xiangyun Du, with their own experiences from the PhD process, generously provided me with both academic and practical suggestions. Finally, I owe much to my husband Zijin Zhao, who has been my efficient technical supporter and often the ‘single father’ at home, and my lovely son Boyang Zhao, who has often been ‘dad’s boy’ and has grown up with this PhD project. The dissertation could not have been completed without their understanding and support.

Finally, my sincere thank goes to the evaluation committee of this dissertation: Professor Gertrud Jørgensen, Professor Anne-Karine Halvorsen Thorén and Professor Xiong Li.

Li Liu

Vallensbaek, Denmark, July 2008

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1. INTRODUCTION

1.1 Urban environment in focus

URBANIZATION AND URBAN CHALLENGES

For the first time in history, more than half of the world's population is now living in urban areas. In more developed regions, rather more than two thirds of the population is urban and this proportion will continue to increase. By 2030, about three of five people on the planet, and four of five people in the more developed regions will live in urban areas (*World urbanization prospects*, 2007). Cities have thus become home to most of the world's population. As a result, there is an increasing attention to quality of life and environment in cities.

Urban growth has caused great pressure on natural resources and on the environment, threatening to compromise 'urban quality of life'. Cities have never been self-sufficient as they demand "a complex set of importing and exporting arrangements for people, food, waste products and goods produced" (Mazza & Rydin, 1997, p.4). However, the metabolism of modern cities, i.e. the import of large amounts of energy, materials, water, food, and other resource inputs essential for supporting urban populations, and the export of waste products, has reached levels that threaten the environment on a global scale (Rees, 1997). The 'ecological footprint' (the area required to supply the city with food and forest products and to assimilate its waste products) of London alone has been estimated as corresponding to 125 times its surface area or nearly the whole of the UK (Girardet, 2004).

Increasing city connectivity by transport contributes to this enormous metabolism. Moreover, cities are created and extended by development on either agricultural land or natural habitat. Through observation of American cities, Beatley (2000) noted that "the amount of land consumed by urban growth and development far exceeds the rate of population growth, which leads to loss of sensitive habitat, destruction of productive farmland and forestlands and high economic and infrastructural costs" (Beatley, 2000, p.3). Results from a recent study of European cities confirm these observations (EEA, 2006). The surface area of 26 selected European city regions expanded on average 78% between the 1950s and the 1990s, while population increased by only 33%. Thus, increasing per-capita space demand is a major driver of urban growth in Europe. This urban growth has led to the loss of farmland and areas classified as 'natural'. Moreover, the proportionatal cover of urban green space has declined in most cases (Kasanko et al., 2006).

Various signals have alerted people to the negative environmental consequences of urbanisation, among which are changes in local climate and

water systems, environmental pollution and negative impacts on native plant and animal species (e.g. Bridgman et al., 1995).

IMPORTANCE OF URBAN GREEN SPACE

That urban green space plays a critical role in developing a 'better' city and in making sure that city life remains bearable is not a new concept. During the 19th century industrialisation in Europe and the USA, many cities used urban parks as a remedy for deteriorating urban conditions (such as poor sanitary conditions and limited contact with nature) (e.g. Jørgensen, 2005; Konijnendijk, 1999). Urban green areas were increasingly seen as important recreational environments for city dwellers. As new knowledge developed, the importance of urban green space with its many functions became increasingly recognized. Nowadays, urban green space is considered important for improving urban quality of life, for biological conservation, for improving local climate conditions, for prevention of unplanned urban growth and even for economic growth of cities (e.g. Tyrväinen et al., 2005; and other sources, see Chapter 2).

SUSTAINABLE URBAN DEVELOPMENT

In the policy domain, the concept of 'sustainable urban development' has had considerable impact on awareness of the urgent urban environment issue, and also on appreciation of the importance of urban green space. By the late 20th century, the world's population increase and growing consumption had resulted in visible environmental degradation, which was marked by global warming, biodiversity loss and patterns of sprawling land consumption (Beatley, 2000). The concept of 'sustainable development' was suggested under these circumstances as an alternative strategy for combining the survival of human society and protection of the environment. In the final report of the United Nations Commission on Environment and Development (the Brundtland Report), 'sustainable development' was defined as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p.8).

Later, at the United Nation's Rio Earth Summit of 1992, Agenda 21 was agreed upon by many of the world's governments (*Agenda 21,* 2007). Agenda 21 outlined policy actions necessary to achieve sustainability. It addressed the development of societies and economies by focusing on conservation and preservation of our environment and natural resources. Agenda 21 has a strong local focus, with two thirds of its action items relating to local councils. Each local authority was encouraged to draw up its own Local Agenda 21 through discussions with its citizens (*Local agenda*, 2007).

Within this general context, the city has become a central object of attention. The Brundtland report dedicated a whole chapter to stress the problems of cities (WCED, 1987). The strong emphasis on local action for sustainable development (as suggested by Agenda 21) also implied an urban focus.

Since then, the topic of urban sustainability has been given considerable attention within the European Union, where environmental issues, sustainability and cities became a potent policy mix. As a leading initiative, the *Green Paper on the Urban Environment* published by the European Commission in 1990 encouraged "more integrated, holistic approaches to planning, and the need to view cities as a necessary part of the solution to global environmental problems" (Beatley, 2000, p.16).

1.2 Relevance of urban planning and urban green space planning

URBAN PLANNING AND SUSTAINABLE URBAN DEVELOPMENT

Though 'sustainable development' is a multi-sectoral activity, planning has an important component role in tackling the issues proposed by this concept. This is because planning has a primary concern with land (Welbank, 1993). Land resources are precious. The use of land imposes demands on natural resources and creates environmental impacts. Many planners in Western democracies believe that the most important challenge in their planning field is to replace current resource-consuming and environmentally straining activities with those that are environmentally sustainable (Næss, 2001). Reducing the need to travel, maintaining the viability of city enterprises and reinvigorating the urban way of life have become central terms in physical planning (Beatley, 2000; Mazza & Rydin, 1997). For example, planning can help to reduce the need for movement and enhance environmentally friendly travel modes such as walking, cycling or use of public transport. It can thus reduce the consumption of natural resources and limit negative environmental impacts.

Moreover, planning has a role in implementing a whole range of social, environmental and economic policies. The planning sector has an important role to play along with other agencies and organisations that have primary roles in environmental protection. Above all, planning seeks to coordinate and bring coherence to what would otherwise be a farrago of policies (Welbank, 1993).

IMPORTANCE OF GREEN (STRUCTURE) PLANNING

As mentioned, the importance of urban green space in social functions, biodiversity conservation and other environmental processes for sustainable development has been widely recognised in Western society. However, with increasing wealth as one of the driving forces, urban sprawl is "turning many

landscapes upside down", from "urban islands in a sea of green" into "an urban landscape with green fragments" (Tjallingii, 2005a). Other problems exist such as lack of funding and management and, generally, a lack of quality in green spaces (see e.g. Werquin, et al., 2005). The loss of green landscapes and the poor maintenance of those that remain has become an increasing concern of both urban and rural populations (Tjallingii, 2005a). Increasingly, previous urban planning approaches have been criticized for the little attention given to the built environment and city surroundings (e.g. Gomez & Salvador, 2006). There is pressure for green space to be considered a priority in urban planning. For example, priority sites with high habitat values for wildlife could be incorporated into urban development planning along with a guarantee that these lands would well protected. This approach would contribute to the biodiversity goal of sustainable development.

Therefore, planning of urban green space has become a promising and integrative approach to achieving a sustainable urban environment. Recently, the term landscape urbanism was coined to express the notion that urban landscape should be a prime component in configuring urban development (Waldheim, 2006). However, challenges for urban green space planning remain, e.g. the issues of (1) establishing a relationship between different green space functions, (2) developing a recreational system, finding (3) a balance between 'Green City' and 'Compact City', (4) a balance between the defence and integration of green areas, and (5) a balance between top-down and bottom-up planning approaches (Szulczewska & Kaliszuk, 2003; Tjallingii, 2005a).

1.3 Urbanisation and urban green space planning in China

URBAN POLICIES AND ENVIRONMENTAL CHALLENGES

Although it has a strong agricultural past, China is now rapidly urbanising. In the current Chinese context, urbanization is seen as an important vehicle for economic development and for a wealthy society (Niu, 2004). The city represents not only modern civilization, but also the integrative competitive power of a country. To speed up urbanisation has been a major policy goal of China during the last thirty years. Since China adopted the opening up policy in the late 1970s, urban policy has shifted from earlier 'relative restraint of urbanisation' (1949-1977) to encouraging urbanisation for economic development. Since then, China has experienced rapid economic growth and urbanisation. The urban population of China increased from 19.6% in 1980 to 40.4% in 2005 (*World urbanization prospects*, 2007). The government's goal has been to increase the urban population to 75% in 2050, which is the current urbanisation level in more developed countries (Niu, 2004).

At the turn of the 21st century, the Chinese government reiterated the goal of the first twenty years of the new millenium would be to build "a well-off society in an all-round way", including progress in political, economic, cultural, scientific and technical aspects. Speeding up urbanisation is one of the main tasks for achieving this goal. It follows the principle of "raising the level of urbanisation gradually and persisting in the coordinated development of large, medium and small cities and small towns along the path to urbanization with Chinese characteristics." (*Jiang Zemin's report*, 2002).

By the late 20th century, two decades of a rapid urbanisation process have already led to many urban problems, e.g. the lack of drinking water and power resources, traffic congestion, a deteriorating environment and resulting physical and mental health problems for urban dwellers. Some northern regions, including the capital of Beijing, have experienced large-scale dust storms several times during recent years. These problems have alerted people to take better care of their living environment. Within this context, people are increasingly aware of the value of urban green space as a potential contributor to the quality of city life. Therefore, planning and management of various types of urban green space have become an important part of policy.

The Chinese government is increasingly aware of the conflicts and problems brought about by urbanisation. Solutions and measures for conquering these problems have been encouraged. Issues such as protection and sustainable use of land, water and energy resources and scenic spots are increasingly discussed. One of the present urbanisation policies is "to scientifically develop the plans and aims for urban and rural infrastructure development. We should improve our inhabitants' environment by enhancing urban infrastructure construction and perfecting such functions as urban housing, public and community services, improve the urban ecological environment, and prevent and control environmental pollution" (Jiu, 2004, p.377). In addition, good experiences for sustainable urbanisation, as well as learning lessons from the developed countries in particular are encouraged (Jiu, 2004).

THE IMPORTANCE OF GREEN SPACE PLANNING IN A CHINESE CONTEXT

International initiatives, such as the concept of sustainable development and Agenda 21, have also sped up the recognition of urban environmental issues in China. As a response to Agenda 21, the Chinese government started to prepare 'China's Agenda 21' soon after the Rio Earth Summit in 1992. The Chinese Agenda 21 was published by the State Council in 1994 (*Background information*, 2008). It lists urbanisation and the urban environment as key fields for action. The objectives for the development of the Chinese sustainable city is to construct human settlements "which should be

rationally laid out with comprehensive facilities, which are convenient for working and living, and which have clean, quiet and comfortable environments". The issue of urban greening is emphasised. To achieve its goal, the Agenda encourages further urban planning research, in particular with cooperation and communication at the international level (*China's Agenda 21*, 1994).

URBAN GREEN SPACE PLANNING IN CHINA

Urban green space planning is not completely new in China. As an early urban green space type, the garden has had a long history in old Chinese towns. Traditionally, gardening has a closer relationship with art than with nature and city planning. The philosophy behind the Chinese garden still influences the conceptual 'nature' of Chinese people and the way they appreciate urban green space. China also has a long history of tree planting along roads and river banks (Yu et al., 2004). This history has had a strong influence on the road greening policy and activities of contemporary Chinese cities.

The origin of the contemporary national greening policy, including the policy for urban green space, dates back to the 1950s (Halik, 2003). Since the 1990s, green space issues have been given more attention in urban planning and urban development. Two national policy initiatives, viz. the issuing of 'Regulations for Urban Greening' and the development of a 'National Garden City' competition in the early 1990s have had great impact. Urban green spaces within and around cities are considered important for urban development both in the City Planning Act (1989) and the Environmental Protection Law (1989). In 2004, an updated urban greening policy was adopted to construct the 'Ecological Garden City', based on interpretation of the Chinese government's 21st century goal to build "a well-off society in an all-round way", as well as being a response to the initiative of sustainable development (*Circular about issuing*, 2004).

In contemporary China, the urban green system plan is intended to be a tool for urban greening through linking urban planning and individual green spaces. According to the City Planning Act (1989), the 'Urban Green System Plan' is a sectoral component of the Master Plan. However, urban green space planning has a relatively weak status on the overall urban planning agenda. Urban green system planning is often several years behind urban planning, and even behind urban development (Zhang, 2006). Green plans face challenges in their implementation stage (Yang & Zhou, 2007). In planning practice, the dedication of land for urban green space often comes after the assignment of land for industries, residential areas, municipal areas and infrastructure. The urban plan often just tries to meet the norms of 'public green space per capita' and 'greening rate'. In the implementation

stage, green space often loses out to other types of land use covered by the urban plan (Li, 1999).

CHALLENGES IN PRACTICE

Rapid urbanisation and urban construction have led to many planning and development activities for urban green space in Chinese cities. Many cities have made great efforts to develop urban green space. This has brought encouraging changes (at least visually) in the urban environment in many cities. However, problems of green space development in Chinese cities can also been observed. These include, for example, green space development being ad-hoc rather than strategic, lack of respect for existing natural resources, lack of consideration for relationship between green spaces, and, sometimes, a short life circle of green spaces following a 'build-demolish-rebuild' pattern (Yu & Li, 2003; author's personal observations before beginning this study).

1.4 Research objectives

HYPOTHESIS AND PROPOSITIONS OF THE STUDY

This study begins with the challenges and opportunities that rapid urbanisation in China bring to urban green space. Can certain principles be set for developing and managing urban green spaces so that they can contribute to sustainable urban development? This is the central question of my thesis. My hypothesis was that a well-planned urban green space system can ensure that the functionality of each individual green space may be optimised so as to contribute to the city and to city life over the long term. This interest brought me to study a series of green space planning concepts that have been developed in other parts of the world to tackle this question. These included, for example, the Boston park system planned and designed by Frederick Law Olmsted, the green belt for Greater London and the American Greenway movement. But my focus was soon directed towards the green structure planning concept developed in Europe during recent decades, as this concept seemed to hold particular promise and relevance for the Chinese context (Liu, 2005).

The perspective and the framework of this dissertation developed throughout the duration of the work to a rather broader perspective of studying the links between urban planning, urban green space planning and urban greening practice. This development was based on my growing recognition that studying urban green system planning only in terms of technical and physical components could not tackle all of the challenges that green space planning in China is facing, and especially not those challenges met in the implementation phase. It has become clear to me that urban green space planning must be seen and emphasised within its particular socio-

cultural and planning context, but attention has been focused rather on statutory planning and technical issues. Very few studies have focused on both green space planning and urban greening practice within the Chinese context. I hope that this study contributes to filling the gap.

In recent years urban greening issues have been much emphasised in urban planning and development policies in China. Since the 1990s, there have been extensive studies and developments related to what is called 'urban green system planning'. Concepts of urban green space planning from Western countries have been studied and (partly) implemented. Concurrently, there has been development of good practice procedures that embody typical Chinese approaches to green space planning and greening. Hopefully this work, with its comparative viewpoint, can promote an exchange of experiences and knowledge between Chinese and European (international) approaches to urban green space planning.

OBJECTIVES

The main objective of the study was to provide an integrative overview of urban green space planning in the current Chinese context. Green space planning has been regarded as a comprehensive process with interactions between concepts, planning process and implementation. Better insight into achievements, conflicts and problems during this process is believed to help planners and policy-makers in China to reflect on and improve their future planning actions. In addition, by placing the Chinese urban green system planning approach within the framework of European urban green structure planning, which has sustainable development as a major goal, the current status of urban green space planning in China can be analysed as part of the international discourse on urban green space planning. The objectives of the study were:

1. To gain insight into the role, policy, planning and management of urban green spaces in contemporary Chinese cities and their roles in and relationships to urban planning and urban development.
2. To develop an in-depth case study of the Chinese city Weihai, to identify achievements and barriers to green system planning and implementation.
3. To compare the current Chinese approach to planning and managing urban green spaces with the European approach of green structure planning in order to identify where these approaches could benefit one another.

1.5 Overview of the thesis

Chapter 2 will introduce this study's theoretical framework, which is mainly based on the western discourse on urban green space and urban green space

planning. Chapter 3 will present the research methodology applied. In Chapter 4, the overall Chinese social, cultural and planning background for urban green space planning is introduced. Chapter 5 presents the main findings of a case study of Weihai. An historical overview of Weihai's city development and urban green space development is presented first. This is followed by an analysis of goals, actors and process, and the outcomes and impacts of planning and development of urban green space. Chapter 6 discusses the research findings. It starts with discussing the strengths and constraints of urban green space planning and development in Weihai. Subsequently, the underlying issues in the Chinese socio-cultural and planning system that influence urban green space planning are discussed. This is followed by a discussion of the similarities and differences among Chinese urban green system planning approaches and those of European urban green structure planning. Finally, Chapter 7 provides the study's conclusions and suggestions for improvement of urban green space planning in Weihai and China at large, as well as some perspectives for future research and development.

2. THEORETICAL FRAMEWORK

This chapter introduces the theoretical framework within which the present study was conducted. Section 2.1 introduces relevant planning theories and a framework for analysis of planning. It explains the perspectives that have influenced and shaped the current discourse on urban green space planning. Section 2.2 introduces the main functions and benefits of urban green space from a sustainable urban development viewpoint. Section 2.3 introduces the central concept of this project, i.e. 'urban green structure planning', which provides the 'lens' through which the planning and development of green spaces in Weihai were viewed. Finally, section 2.4 presents the research questions of the study.

2.1 Planning for the urban environment

This section will first give an overview of the different planning theories developed during the past 50 years, which is followed by an introduction of some current urban planning perspectives. The overview of planning theories is mainly based on Taylor (1998). Subsequently, based on approaches in policy study, I present a framework for analysing planning. Finally several central discourses on planning for the urban environment are introduced.

PLANNING THEORIES

Short overview of the different perspectives

There have been various traditions in planning theory and practice, which are all based on their specific views of urban planning. In Europe in the 1940s and 1950s (and even long before that), the view prevailed that urban planning was an exercise of physical planning and design. Planners considered themselves as technical experts providing quality of life to the majority of citizens by means of 'blue-print' plans. Later, in the 1960s, based on a more scientific focus, the systems and rational process view of planning came to predominate planning theory in Western countries. At the same time, planning as a political process that rested on value judgements about a desirable future was also debated. However, since the 1970s, the systems and rational process view of planning has been succeeded by the recent practice movement (theories of planning effects and implementation) and the view of planning as a communication process that emphasises the importance of social economical context and the political nature of planning. At the same time, problem-centred planning theory has gained greater attention (Taylor, 1998).

The shifts of planning theories were influenced by fundamental changes in western thought and culture, for example the evolution of 'modernism'

and ‘postmodernism’ (*ibid.*). ‘Modernism’ was based on a fundamental intellectual orientation relying on reason and science. It was believed that “through rational analysis and greater scientific understanding, humans could create a better world for themselves” (*ibid.*, p.164). It resulted in the first paradigm shift of planning theory in the 1960s, from urban design tradition to the systems and rational process views tradition. ‘Postmodernism’ questioned the existence of a universal truth. It stressed complexity and diversity as opposed to the simplifications of modernism. It brought about the second paradigm shift in planning theory during the 1970s and 1980s, from “a view of planner as a technical expert to the view of the planner as a facilitator, drawing in other people’s views and skills to the business of making planning judgements” (*ibid.*, p.158).

Faludi (1973) categorized two types of planning theory. One is that of ‘substantive’ planning theory, which is about the object (towns, cities, the environment) urban planning deals with, including theory that aims to improve our understanding of the problems planning addresses. The other is ‘procedural’ planning theory, which is about the process of planning itself. Based on this latter view, the early theory of physical planning and design, the systems theory to planning, and the recent problem-based planning all fall under the substantive planning umbrella. The rational process planning theory, planning as a political process, theories about planning effects and implementation and communicative planning may all be linked to procedural planning theory. Although this separation is arbitrary, and no planning theory could absolutely exclude substantive or procedural features, the two categories can help understand the main focus of a particular theory. Based on Taylor and Faludi’s views, topography of some main recent Western planning theories has been developed (Table 2.1).

Table 2.1. *Topography of main western planning theories since the 1950s.*
Sources: Based on Faludi (1973) and Taylor (1998).

	Substantive theory	**Procedural theory**	
The 1950s and earlier	Physical planning & design	-	← The 1st paradigm shift
Modernism (the 1960s)	Systems theory	Rational process planning Planning as a political process	
Post-modernism (the 1970s and 1980s)	Problem-centred planning	Practice movement of planning Communicative planning	← The 2nd paradigm shift

Practice movement of planning

Since the early 1970s, a growing number of planning theorists has developed a focus on planning as an activity and on the actual practices of planners,

which together are called the ‘practice movement’ of planning theory (Watson, 2002). It grew from the recognition of the deficiencies of the rational model of planning, by criticising its top-down view of planning and lack of consideration of the role and effects of existing planning and its implementation (Taylor, 1998). These theorists emphasise that planning in practice is “grounded in the empirical investigation of planning” rather than dealing with an ideal way of rational decision-making (*ibid.*, p.97). Even though implementation was considered in the rational process (planning-decision-implementation-recycling), it was easily forgotten. After plans have been made, actions may be carried out by deciders who do not follow the plan.

The practice movement also emphasises the impact of the broader political social and economic context, wherein many factors and agencies influence urban development. Statutory planning is just one of these factors. In a mainly market-oriented context, statutory planning and planners have much less influence on urban change than “the more fundamental and enduring socioeconomic forces and ‘structures’ (*ibid.*, p.101).” For example, the land market plays a crucial role in determining the outcomes of planning practices.

Moreover, emphasis is on implementation to put policy into effect. This perspective stresses the need to consider implementation during the process of drawing up plans (e.g. Pressman & Wildarsky, 1973; Taylor, 1998). Further, adoption of an integrative view of policy/planning and implementation has been advocated (e.g. Barrett and Fudge, 1981; Friedmann, 1969; Taylor, 1998) as policy/planning often responds to ‘implementation (or action)’. These theorists often hold an actor perspective and emphasise planners’ interpersonal skills. Since the realisation of public plans depends on other stakeholders, for example private developers, it is important for planners to understand and work with all parties that will be affected by the outcome of an implementation. Successful planning requires both basic conception of policies designed to survive the “constantly shifting political and social pressures in the implementation phase” and “individuals who can ‘fix things” when unpredictable implementation problems arise (Bardach, 1977; see also Taylor, 1998, p.121). The emphasis on interpersonal skills led to the development of communicative planning theory.

Communicative planning

During the late 1980s and 1990s, the communicative planning or collaborative planning theory gradually developed to become the dominant discourse in contemporary western planning theory (Taylor, 1998; Watson, 2002). Healey (1992) called it the ‘communicative turn’ in planning theory. The communicative planning theorists advocate a democratic, participatory

style of planning, which incorporates all groups likely affected by environmental change, and not just the powerful actors who implement the change. They believe that planners have the duty to facilitate democratic, participatory planning, especially involving less powerful groups (Forester, 1989; Taylor, 1998).

The communicative planning theorists stress a normative purpose to planning theory and practice, i.e. good institutions and communities are to be achieved through a collaborative planning process (Yiftachel, 1999). Local planning authorities have become increasingly dependent on non-governmental actors to realize their goals. Therefore planning activity increasingly becomes "an activity of networking, bargaining and negotiation—of 'doing deals'" (Taylor, 1998, p.145). Communicative planning theory focuses on relations and processes of communication rather than objects and forms (Graham & Healey, 1999; Taylor, 1998). Since proposed forms such as 'compact cities' or 'multi-functional zones' relate to particular social, economic and cultural behaviours, planning theory and practice should recognize the power relations of places and actors interplayed through communication and interpretation, as well as the many values systems interplaying with the times and spaces of the city (Graham & Healey, 1999).

The communicative approach assumes that all technical knowledge is "inevitably infused with biases reflecting particular interpretative predilections and normative values" (Healey 1992, p.9). Communicative actions need to be interpreted through the meanings, values and motives lying below the surface of 'technical talk'. Communicative planning theorists take agency as the study subject and try to analyse the discourse in both speech and text (Taylor, 1998). Through uncovering the meanings under the surface of planning conversation, they explain what planners really do and stimulate consideration of how planners could possibly work better.

Planning as a political process

Contemporary planning theory, including practice movement and communicative planning, has generally accepted a view that planning is fundamentally political in nature (Watson, 2002). As early as the 1960s, some theorists called attention to the value-laden and political nature of planning, stressing that the identification and solution of urban problems are about values and political debate. Urban planning action can affect the lives of large numbers of people, and since different individuals and groups may hold different views about their preferred environment (based on different values and interest), it is a political activity. The process of planning is a process of choice. Personal (or social) choice is often at odds with a shared value system, and rather tries to define, and "sometimes deliberately to

reshape" the value or identity of the individual or community (Tribe, 1972; Taylor, 1998).

With this political view of planning, the role of the planner was subject to debate. Some experts suggested that planners should confine themselves to technical matters. In this view, the planner may need to deal with values, but what values planning aims to realise should be left to political choice. Others have argued that planners should more actively involve themselves in the political process by acting as 'advocates' for public groups, especially for those whose interests were not well represented in the process of planning. The latter view was related with the idea of public participation in planning, which is part of a more general philosophical debate about democracy. Public participation has many forms, ranging from consultation with the public to the public actively participating in decision-making. The question is: to what degree the public should be given a chance to decide (Taylor, 1998)?

By regarding planning as a practice and a communication process with a political nature, many planning issues share commonalities with those of politics and policy (e.g. public participation and decision-making processes), including their analytic approaches.

Analysing planning processes

Procedural planning theories, especially the recent theories of planning effects and implementation and the communicative planning approach, focus on analysis of planning practices within the framework of policy study. What follows is an introduction to a particular policy analysis framework and its application to analysis of planning process. However, the definition of 'policy' and its relationship to planning need to be discussed first.

Policy and planning

Policy and planning are related. A policy is "a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions; or a high-level overall plan embracing the general goals and acceptable procedures especially of a governmental body" (Merrian-Webster, 2008). Planning is "the act or process of making or carrying out plans; specifically, the establishment of goals, policies, and procedures for a social or economic unit" (*ibid.*). Very few sources explain the precise relation between policy and planning. The term 'policy' is often used by planning theorists as a synonym for the term 'plan'. This may be due to the interrelated multi-layered meanings and applications of both. The confusion is well illustrated by the fact that the Wikipedia website's 'policy' page directs the reader to the page for 'urban planning' when following the active link to 'urban policy'(*ibid.*).

Relevant to the theory of planning, policy study in western society has generally adopted a broader meaning of 'policy' that includes the formally articulated meaning in policy statements and the implicit meaning in cultural practices (or action). It also indicates a view of policy as a process. Policy intentions are often not formally articulated, but rather emerge during the flow of governance activity. From time to time, such informal policies will be (through a bottom-up process) explicitly acknowledged and converted into policy statement. A policy-driven approach to governance requires that policy objectives and strategies are articulated and linked to programmes of action, that are judged by output and outcome criteria linked to the objectives. Debates within planning theory on planning processes have developed in this context in order to devise ways of developing policies that are more accountable and effective.

Policy analysis

Policy evaluation studies often make a distinction between three aspects of policy: policy *output*, policy *outcom*e and policy *impact* (Arts, 2006). Policy *output* "refers to plans, ideas, rules, etc., which are produced by a policy process"; policy *outcome* "describes the behavioural change in human agencies as a consequence of the output"; and policy *impact* "indicates the extent to which a change in behaviour contributes to achieving policy goals" (*ibid.*, p.13). To understand a certain policy in relation to its effect to the world, it can not be viewed from the perspective of a single aspect only, for example 'policy impact'. In policy practice, very few cases can be judged as successful for all three aspects. A policy that has limited direct impact may have produced a series of plans, programs, resource mobilisation and behavioural change that may sooner or later contribute to putting the policy goals into reality. "Policy output (plans, programs, institutions) and outcome (behavioural changes) are necessary prerequisites for policy impacts in a long run" (*ibid.*, p.14).

Furthermore, there is mostly no direct link between policy output (plans) and policy impact (effects), because there are "usually many intervening factors and unanticipated obstacles to implementation" (*ibid.*, p.14). Thus policy makers and their plans are not by themselves responsible for whether or not the policy goals are achieved. These "intervening factors and unanticipated obstacles" become more obvious when they are related to the governance context. This again has commonalities with the practice movement of planning theory, which suggests examination of the political economic context and communicative process for understanding planning.

According to Arts (2006), different views on the concept of policy will result in different emphases in relation to the three aspects of policy, and thus result in different understandings of a certain policy. For example, the 'rationalistic' perspective attempts to focus on the policy impact when

deeming a certain policy successful or not. ‘Network theory’ attempts to emphasise policy outcome. ‘Institutionalism’ and ‘constructivism’ then focus on policy output, the former on organizations and the latter on discourse. Each of these perspectives has strengths and limitations in capturing a more comprehensive picture of a certain policy, and the distinctions between them are often blurred in reality. In an attempt to combine these perspectives, Arts (2006) suggests a ‘middle-road’ termed ‘discursive institutionalism’ that “focuses on the effects of new ideas and discourses on the existing institutions with a dynamic perspective” (*ibid.*, p.18).

Based on ‘discursive institutionalism’, a concept and analysing framework called ‘Policy Arrangement Approach (PAA)’ has been developed for policy study, and for environmental policy analysis in particular (Arts, 2006; Tatenhove, Arts, & Leroy, 2000). Policy arrangement refers to “the temporary stabilisation of the *organisation* and *substance* of a policy domain at a specific level of policy making” (Tatenhove et al., 2000, p.54, my emphasis added). *Substance* refers to *policy discourses*, which are defined as “dominant interpretative schemes, ranging from formal policy concepts to popular story lines by which meaning is given to the policy domain” (*ibid.*, p.63). In general, “a policy arrangement can be characterised by one dominant policy discourse, the content of which is continually challenged by competing discourses”. Examples of policy discourses in the environmental field are ‘eco-development’, and ‘sustainable development’ (*ibid.*, p.63).

Organisation has three main dimensions: *policy coalitions*, *power and resources*, and *rules of the game*. *Policy coalitions* include both inter-governmental coalitions and the coalitions of interest groups and NGOs. A policy arrangement can include several policy coalitions, each of which consists of a number of players sharing similar policy goals and engaging in policy processes to achieve those goals. *Power and resources* are related to, “on one hand, the ability by actors to mobilise resources and, on the other hand, to the relational and structural phenomena of social and political systems. The former refers to political power as a more or less permanent capacity of agents to maintain and transform their social or physical environment, and to achieve certain policy outcomes. Such outcomes may be achieved not only by determining political decisions, but also by dominating public debates, defining policy issues, setting agendas, or even by changing the rules of the game” (Tatenhove et al., p.59). These *rules of the game* “determine how politics is played, which norms are legitimate, and how policy outcomes are achieved, e.g. by which procedures, by which allocations of tasks, and by which division of competencies between actors and organisations. There are formal rules and informal rules. The former is “fixed and authorised in legal texts or documents”, the latter is part of the

political culture and is used by actors in the policy-making process (*ibid.*, p.61).

Conclusions for a framework by which planning processes may be analysed (inspiration from policy study)

An analytical framework for application to analysis of modern-day planning can benefit from policy study and policy analysis. A special feature of urban planning is that it is related to the physical urban environment. When examining effects of planning, changes in both environment and behaviour should be related to the planning objectives. When adapting the three aspects of policy ('output', 'outcome' and 'impact') to planning, *planning output* could be the statutory and informal planning documents produced by the planning process, as well as the set of ideas communicated by dialogues during the planning process but not set forth in documents. The meaning of 'outcome' in a planning context is broader than the interpretation of Arts (2006) for policy study. The importance of the physical urban environment in planning study adds another dimension of 'outcome' beyond that of policy study. *Planning outcome* could then be regarded as the implementation activities by the actors and the related changes in the urban environment that are brought about by plans, policies and ideas. *Planning impact*, finally, refers to the extent by which urban environmental changes and changes in people's behaviour contribute to achieving the planning goals.

In planning practice, many activities occur between planning output and planning outcome, including the often emphasised processes of making statutory plans, communication amongst the actors and implementation of plans and ideas. These activities and interrelations are vital for understanding specific planning circumstances and the meaning behind the planning output (e.g. plans) and planning outcome (e.g. changes on the ground). In order to analyse planning, the framework of the 'Policy Arrangement Approach' may be applied to planning study. The 'policy discourse' is related to the shaping of goals of plans, policies and ideas produced during the planning process. 'Policy coalitions', 'power and resources' and 'rules of the game' will all affect the interrelations and activities among the actors (including government institutions) during the planning process. These three dimensions of policy arrangement can be compared to the 'actors and process' aspect in a planning context.

Learning from policy study and policy analysis, while at the same time keeping in mind the special character of planning, three overall aspects of planning can be distinguished for analysis, i.e. *'goal'*, *'actors and process'* and *'outcome and impact'*. Table 2.2 shows the relation between the aspects of planning and those of policy study and policy analysis.

It should be emphasised that the 'outcome and impact' component, especially the changes in physical environment, is crucial for planning study.

Even though regarded as an action process, urban planning is, after all, directed at shaping the physical environment with which people can interact. Without consideration of physical environment, it is impossible to observe the effects of planning goals.

Table 2.2. *Relation between aspects of planning, policy study and policy analysis.*

	Discourse/ substance	**Activity/behaviour of actors/institutes**	**Urban environment & people**
Policy study	Output	Outcome	Impact
Policy arrangement	Policy substance	Policy organisation: policy coalitions, power & resources, rule of the game	
Analysis of planning process	Goal	Actors & process	Outcome & impact

RELEVANT CURRENT DISCOURSES ON URBAN ENVIRONMENTAL PLANNING

As introduced above, procedural planning theory has a dominant position in contemporary planning discourse. However, some planning theorists criticise its abstract way of looking at the nature of planning. They believe that planning theory should be grounded in the study of the 'substantive' issues that planning deals with. Taylor (1998) suggested that both procedural theory (about practical reasoning and judgement) and substantive theory (rigorous theories about environmental quality) are relevant to urban planning; specific theory is related to a specific question. Since "we have learnt more about the practical process of urban planning than we have learnt about what environmental qualities we should aim at and how they might be realized", there is a great need to further develop substantive planning theory (*ibid.*, p.168). The following paragraphs introduce three groups of substantive discourses on urban environment planning that are relevant to this study.

Sustainable development approach

In the past 20 years, the concept of sustainable development has had great influence on urban planning, both in procedural and substantive terms (see also Chapter 1, Sections 1.1 and 1.2). However, extensive contemporary planning literature on planning procedures and sustainability does not clarify what is considered to be the substantive content of sustainable spatial planning (Næss 2001; Yiftachel & Huxley, 2000). In an attempt to discover the 'substantive' issues of sustainable spatial planning in wealthy industrial countries, Næss (2001) summarized five elements:

1. Reduction of energy use and emissions per capita in the area down to a level compatible with ecological and distributional criteria for sustainable development at a global level.
2. Minimizing conversion of or encroachment on natural areas, ecosystems and soil resources for good production.
3. Minimizing the consumption of environmentally harmful construction materials.
4. Replacement of open-ended flows whereby natural resources are transformed into waste, with closed loops relying largely on local resources.
5. A sound environment for the city's inhabitants, without pollution and noise damaging to the inhabitants' health, and with sufficient green areas to give opportunities for the population to experience and emotionally relate to nature (*ibid.*).

It is obvious that all these issues reflect a strong concern about the impact of urban activities and urban development on the environment. The discussion of these discourses is fundamentally about how the city and development should be placed in relation to nature. In attempting to find a solution for an optimum relationship between urban development and nature, some scholars focus on the debate about urban form, and others focus more on the natural processes of a city by adopting an urban ecology approach. Both foci are important for the issue of urban green space planning that is the concern of this thesis.

Compact city versus green city

Two different opinions on the nature-city relation can be discerned in the 'green city' and 'compact city' debates. Traditional policies on urban development applied the former approach. Since the late 19th century, many cities in the industrialized world have been applying garden city or green city ideas for the shaping of a pleasant urban form; these can be found, for example, in the shapes of suburbs with detached housing (Thorén, 2000). The green city approach focuses on the importance of parks and other green space, and non-polluted air and drinking water to the inhabitants' health and quality of life. In the context of sustainable development, countries like Denmark relate the green city ideal to local self-support by means of closed cycles of substances. The consequence of the 'green city' model is that new development takes place as a spatial extension of the city (Næss, 2001).

Concern about the negative effects on resource expenses and environmental impact brought about by urban sprawl led to promotion of the compact city form, which contrasts strongly with the garden city concept (which is much more space demanding) (Thorén, 2000). The 'compact city' model implies that future needs for development should be met through

densification within existing urban areas (Næss, 2001). In some European countries (e.g. Netherlands) the compact city has been an overriding theme since the 1960s. This approach looks at town and country as separate entities and strives for compact urban development and preservation of rural open spaces. This is exemplified in the 'Green Heart' concept applied in the Dutch Randstad Metropolis (Hidding & Teunissen, 2002). Compaction has been offered as a solution to current urban growth in many Western European countries (Breheny, 1997). However, the drawback with compaction is that it has a negative impact on existing green space in cities because the densification process leads to land use competition with existing or potential urban green space. There are signs in Swedish and other cities that the unexploited areas in cities have been decreasing during recent years due to the wider adoption of compact city ideas (Pauleit et al. 2005; Sandström, 2002).

The ongoing debate about green city versus compact city models deals with the ways in which each may offer a better way to reach a higher degree of sustainability. The concept of sustainable development (see Chapter 1, Section 1.1) alone may not be able to resolve the debate. The arguments should be viewed with the spatial scale in focus. The garden city model takes a local perspective to stress that recreational areas, green spaces acting as 'green lungs' and other areas of biological value are essential for local environmental quality and the quality of citizens' lives. The compact city model takes a regional view to emphasise that the provision of urban green space to local citizens should not endanger the natural landscape on a regional scale by unlimitedly expanding urban areas (Thorén, 2000). Næss (2001) refers to the green city concept as 'ecology within city', while he characterises the compact city model as 'city within ecology'.

Natural process approach

Other scholars suggest that urban development does not necessarily have to choose between either 'green' or 'red', as 'green' can be integrated with 'red' (Hidding & Teunissen, 2002; Tjallingii, 2003). Hidding & Teunissen (2002) advocates network concepts as promising alternatives to make the concept of sustainable development operational in a planning context. In the present network society characterised by mobility and dynamics, the driving forces behind spatial fragmentation become stronger. Governments may not have enough power to resist the dynamics and urban growth. Plan concepts such as those of the compact city or garden city are increasingly difficult to realise. Networks "refer to infrastructure networks that accommodate flows of traffic, persons, information, goods, water, the migration of animals, and even the dispersion of plants" (Hidding & Teunissen, 2002, p.299). "Networks are no longer seen merely as connections between different points, but rather now as a point of departure for planning" (*ibid.*, p.299).

Some networks are essential from a sustainability perspective and can therefore be used as strategies for spatial organization. Single networks include the water, traffic and ecological networks. Integrated networks include the city landscape concept and integrated green-blue network (*ibid.*).

The network concepts do not offer a general static model of spatial development or a specific urban structure. They focus on networks and related processes instead of land use patterns or choosing between development forms. All solutions depend on the specific characteristics of local circumstances. Taking the city landscape concept as an example, it can lead to various outcomes, depending on characteristics of natural features and cultural-historical background of the landscape. Network concepts allow for a combination of green and red functions. Spatial quality may be approved through 'red should pay for green'. More complicated than the traditional image of cities surrounded by green (and open) space, network concepts suggest urbanisation as "becoming polynuclear and red; green and blue structures becoming far more interwoven"; city and countryside become more integrated (*ibid.*, p.307).

Cities can be seen as dynamic and complex ecosystems (Tjallingii, 2004). Nature does not end where the city starts. The city also provides habitats for wildlife. It embraces processes of rainwater cycling, climate and soil processes, as well as vegetation growth. When looking at nature as both culture and cultivation, as both object and process, building cities is about working with nature (Hough, 2004). Planning for both nature and city does not necessarily exclude a defensive strategy that protects nature from urban development or an offensive strategy that urges urban development to become greener. Both strategies can be considered. Integrating green qualities in urban development is more feasible in many day-to-day planning circumstances. For example, the strategy of two networks (the water network and the traffic network) has been demonstrated successfully in the Dutch practice of developing these networks as the carrying structures for urban green space, whereby green spaces are integrated with urban functions and enhanced by them. In this case, "the multifunctional meaning of green areas contributes to their empowerment" (Tjallingii, 2004, p.59). The next section enlarges on these concepts of urban green areas and their various (potential) functions and benefits.

2.2 Benefits of urban green space

Planning of green spaces, as will shown, aims to optimise the benefits they provide to urban society. This section will introduce the main benefits of urban green space, with a focus on contributions to a sustainable urban environment. Because there are cultural, environmental and other differences between societies, the (prioritised) benefits of urban green space may differ.

In this section, only a general overview and some common views about the main benefits of green space are provided. In addition, I introduce the main factors that may influence the performance of the benefits.

OVERVIEW OF THE BENEFITS OF URBAN GREEN SPACE

Introduction

The benefits of urban green space vary from intangible psychological and aesthetic benefits to amelioration of urban climate and mitigation of air pollution. Historically, the health, aesthetic and recreational benefits of urban green spaces have been considered as main attributes to a good urban setting in industrialized cities (Tyrväinen et al., 2005). Even though the amenity-recreational benefits of urban green space are still very important today, the ecological role of green spaces and their environmental services are increasingly stressed. This is also true for the economic roles of green areas. The shifts of focus are due to developing knowledge and understanding of human-nature interactions, and the benefits of urban green spaces in particular. Two examples of this are increasing interests in ecological aspects of urban green space since 1960s, and the impact of the concept of sustainability starting from the late 1980s.

Today, urban green space is increasingly recognised for its many roles. The concept of sustainable development and its three dimensions (socio-cultural, environmental and economic) has broadened the range of urban green space perspectives. Urban green spaces become important to people and communities by symbolizing cultural meanings. They are habitats for wildlife and offer a 'textbook' for urban people to learn about nature. Green spaces contribute to a positive, nature-oriented image of a city. They also enhance tourism and promote economic development (Tyrväinen et al., 2005).

Categories of green space benefits

Benefits of urban green space are discussed in a vast body of literature, which provides different ways of categorizing the benefits (e.g. de Groot, 2006; Tyrväinen, et al., 2005; URGE, 2004). Inspired by the various approaches in literature, as well as the perspectives of sustainability, this study categorizes the benefits into socio-cultural aspects, ecological aspects, structural aspects and economic aspects.

SOCIO-CULTURAL ASPECTS

Introduction

From a socio-cultural perspective, the city structure should not only support the individual and social needs of human beings and the overall quality of city life, but also help promote a city's healthy society. Urban green space provides social services essential to the quality of human life, which is a key

component of sustainable development (Chiesura, 2004). This view emphasises the roles of urban green areas in providing 'urban nature' for human psychological needs by accommodating outdoor activities for the public's social needs (such as meeting people, recreation, eco-education, and sports), improving physical living conditions for better public health, and carrying the cultural value of a city. Some of these issues are introduced below.

Recreation, play and amenity use

Parks and nature in the city provide a peaceful and relaxing setting for stressed urban inhabitants. They are 'second living rooms' for people living in confined quarters. Green spaces are places for non-organised sports and for spontaneous activities that complement organised ones. They are activity spaces for an increasingly sedentary and overweight city population. Green space are also environments for children to discover the world; they are active and social places for youth (Ståhle, 2005; URGE, 2004).

Recreational activities in urban green space vary among cultures and social groups, as do the preferred types of urban green space used for these activities. Studies have discovered some general factors influencing the 'recreational performance' of urban green space. These span the size and experienced characteristics of a certain green space including: form/shape, distance to the park, location in the city, the possibility and preference of commuting for leisure, incomes of families and ages (as influences on recreational habits), and the size, accessibility and maintenance of a green space (e.g. Grahn & Stigsdotter, 2005; Ståhle, 2005; Werquin, 2005).

Health

Since the origin of public parks, urban green spaces have been regarded as important factors both for 'public hygiene' and for maintaining an overall, socially-preferred moral (Jørgensen, 2005). Relatively recent scientific studies have identified and assessed measurable effects of nature's influence on both physical and mental health (e.g. Grahn & Stigsdotter, 2005; Kaplan & Kaplan, 1989; Ulrich, 1984). The experience of 'nature' promotes not only a sense of relaxation and re-generative enjoyment, but also a higher spiritual state of integrating oneself with nature (Chiesura, 2004). It is these restorative experiences, the enjoyment of amenity and spiritual sublimation provided and evoked by urban nature that contribute to the quality of human life, and therefore to sustainable development of a city.

Aesthetics

Urban green space includes various elements, such as vegetation, water, stones and sculptures and architecture. They offer various colours, textures, forms and structure that all contribute to rich visual effects in urban settings.

Aesthetic benefits of urban green space relate to people's experience of both the appearance of each element and the composition of them as a whole. Much of aesthetic experience is subjective in nature and has impacts on people's mental and emotional state (e.g. Kaplan & Kaplan, 1989; Tyrväinen, et al., 2005). A variety of research approaches has dealt with aesthetic values, including psychophysical, cognitive (psychological), experiential (phenomenological) and expert approaches (Daniel & Vining, 1983; Lothian, 1999; Tyrväinen, et al., 2005; Zube et al., 1982). Psychophysical research, for example, tries to analyse and rank the preferences of people for various types of urban green space environment (Tyrväinen, et al., 2005).

Visual variation is greatly appreciated by most people, not only in terms of mixtures of vegetation, but also as combinations of trees with fields, meadows and, in particular, water elements. The design quality of edges is essential for human aesthetic experience and visual perceptions. Aesthetic values may partially change over time and are influenced by trends, cultural systems and knowledge (*ibid.*, 2005).

City image

A positive city image is essential for attracting people to live there, for developing a sense of identity for those living in a city, for encouraging investment, and for improving urban vitality. Therefore it contributes to quality of life and sustainable development of a city (*The role of*, 2004). For example, by creating a pleasant outdoor environment with opportunities for relaxation and recreation, urban green space may play a role in projecting a more positive city image. Studies have shown that naturalness in a city (promoted by areas with landscaping, rivers, lakes and mountains) is one of the key qualities that make a city visually appealing (e.g. Nasar, 1997). Because water and vegetation are pleasant to most people, they are among the city elements with high 'imageability' (legibility), which contribute to the formation of a mental map of a city, as well as a positive image of a city (Lynch, 1960).

Similar to the aesthetic aspect, the characteristics of a preferred environment also contribute to city image. These characteristics include: no visual stress production, legibility, coherence, complexity and mysteriousness (Zaleckis, 2005). Moreover, since only parts of the whole city can be perceived directly and visually, it is people's conceptual mental map that creates the image of a city (*ibid.*, 2005). Elements that help to make mental maps or support imagination of a larger attracting environment also contribute to a good city image. These elements are described by Lynch (1960) as paths, edges, districts, nodes, and landmarks. Therefore, urban green space that helps improve the perception and quality of these features will generally contribute to a better image of a city. For native citizens, culture plays an important role in the formation of mental images by

providing culturally determined images and schemes of an ideal city. As a consequence, making the environment more compatible with the cultural image will improve local people's preference for their city (Zaleckis, 2005).

Culture, history, identity (symbolic meanings) and liveability of a place
Cultural and historical artefacts, as well as local traditions, give a city or a neighbourhood its identity. These are irreplaceable features of a city, forming a valuable attraction to tourists and residents. People's preference for their environment is partially influenced by their cultural background. Cultural and historical elements and activities will give people a sense of place. They maintain the feeling of belonging to a well-identified cultural entity amongst local residents. They also contribute to quality of life and the liveability of a place (URGE, 2004). Cultural and historical heritage includes both the natural landscape of mountains, rivers, historic gardens, botanical gardens, local parks and of associated buildings or other man-made features. Protecting this heritage is essential for preserving a sense of place. Most people interpret landscape within their own cultural frame. They use what they perceive immediately to integrate with what they know and remember (Antrop, 2005; Tuan, 1974). Therefore, including elements presenting local history and culture in new urban green spaces will help enhance local identity and a sense of place.

ECOLOGICAL ASPECTS

Introduction
From the perspective of ecology, the urban ecosystem is "a basic set of conditions for both humans and other species" (Tjallingii, 2005a, p.135). This view emphasises the role of urban green areas, especially as habitats for wildlife and as spaces for enhancing natural processes, such as facilitating water infiltration, flood water retention, providing shade, acting as windbreaks, reducing the urban heat island effect; improving air quality, and enabling organic waste recycling. Factors that determine the ecological performance of urban green spaces are the overall provision of green spaces, their size, diversity, distribution, history, and the design and management of each green space (Werquin et al., 2005).

Biodiversity
The biodiversity issue is part of the sustainability agenda, which has among its goals preservation of natural resources for future generations. Biodiversity is typically related to a particular region or country (Thorén, 2000). For example, the 1992 Convention of Biodiversity accepted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro aims to preserve genetic diversity, the diversity of species, and the diversity of biotopes. Biodiversity is emphasized in cities, as

ecological research has revealed during recent decades that cities can be surprisingly rich in species (Sukopp, 1998). Although there is fragmentation, continual spatial decrease and neglect in urban planning, urban nature can still support various mosaics of indigenous and valuable habitats and species (*ibid.*, 1998). This implies that in cities, the areas consisting of spontaneous nature should be considered important for urban sustainable development. However, the knowledge of urban nature at the local level is often limited, which poses a challenge for concrete actions (Thorén, 2000).

Water management

Water structures are essential for cities in many senses. They were key elements in the pre-urban landscape. They carry the identity and the history of a city. Water structures are often 'carriers' of urban green spaces, providing a structural frame. However, urbanisation and construction may impair water structures, hinder the natural way of water circulation and even result in the sinking of ground water tables. Protecting water resource and water structures for today and for the future is a key element of the sustainability concept. Studies have shown that water and green areas often have a common history in a city, usually in a form of green spaces along river valleys (Werquin et al., 2005). From this perspective, water and green areas are natural allies and share a common future. Urban green areas are essential for water arrangement issues, such as flood control, rainwater retention and natural purification. Water elements will in turn enhance biodiversity, tree growth, scenic beauty and recreation.

Strategies and techniques of using urban green space for water management have been developed and implemented (Hough, 2004; Tjallingii, 2000; Tjallingii et al., 2006). On permeable soils with low groundwater tables, for example, the strategy is to use green spaces for rainwater infiltration, leading to groundwater recharge. On hard rocks or impermeable clay soils, rainwater is stored in ponds and watercourses with fluctuating water tables. In upstream mountains and hills, reforestation can be an effective erosion prevention strategy. Keeping floodplains open and green is a strategy for flood control (Werquin et al., 2005).

Climate and air quality

Climate and air quality are important factors in the urban environment. They directly connect, for example, with quality of urban life and survival of wildlife. Studies show that urban green spaces contribute to mitigating bad climate and air conditions connected with hard urban structures. Green spaces provide shade, windbreaks, enhance ventilation, reduce temperatures and improve air quality (*ibid.*, 2005). Green corridors, for example, play a positive role for ventilation and air quality of a city (Tjallingii, 2005b).

Woodlands or tree belts help to reduce air pollution from roads by slowing down air circulation and accumulating dusts.

Urban green space cover reduces surface temperatures, and therefore helps mitigate the heat island effect typical for urban areas. A study in Munich showed that an increase of vegetated surface cover by 10% reduced surface temperatures by, on average, 1°C, and that mature stands of trees were particularly effective (Pauleit & Duhme, 2000). Urban climatologists stress the importance of having a great range of different microclimatic conditions within walking distance (≤150 m) (Tjallingii, 2005b), while avoiding climate extremes. Gómez et al. (2001) discuss appropriate sizes of green zones in order to improve local climate conditions. A dense network of green space is important for meeting these requirements.

Organic matter

In order to achieve sustainable development, a city should – as much as possible – close the ecological loops within its own boundary. The handling of organic matter is an important consideration for achieving this goal. Nowadays, organic waste of a city is seen not just a problem to society, but also a resource of nutrients, energy and compost (Werquin et al., 2005). Urban green space has the potential to accommodate the ecological cycles of organic waste. For example, the maintenance of urban green space needs soil amelioration products and fertilizers, which can be provided by organic waste products (Guldager & Reeh, 2005). Organic waste from agriculture can also be used for biofuel production.

STRUCTURAL ASPECTS

Introduction

Vegetation, urban green spaces and natural landscape are architectural structures for urban space, just like buildings and infrastructures. The structural functions of urban green space are often used in urban planning and design by defining urban structure and urban form, regulating urban development, buffering between city zones, organizing traffic and the architectural use for planning and design.

Defining urban structure

The idea of using green space to define urban structure and organize city development has a long history. Green space is one of the key elements, together with infrastructure and built-up structure, in many theories of city form, for example, the ‘Linear City’ theory proposed by the Spanish engineer Arturo Soria y Mata, the ‘Garden City’ theory proposed by British social planner Ebenezer Howard, the ‘Theory of Organic Decentralization’ proposed by the Finnish architect Eero Saarinen, and ‘Broadacre City’ by the American architect Frank Lloyd Wright (Li, 1999). Among these ideas,

Howard's 'Garden City' idea of the late 19th century has been applied most in American and European cities. The London Green Belt Plan of the early 20th century is one of the influential examples of the application of 'Garden City' theory. In this case, the major purpose was to control urban sprawl (Elson, 1986; Liu, 2005). Stemming from the 'Garden City' theory, another example is the 'Green Wedges' of the Finger Plan of Greater Copenhagen proposed in the mid twentieth century, which has played an important role in organizing urban development until today (Jørgensen, 2004; Liu, 2005; Peter, 1995).

Buffering between city zones

At a smaller scale, parks and urban green spaces are often used in urban planning practice to separate urban zones. An example can be seen in the planning concept of 'Albertslund South', a new town planned in the south-west of Copenhagen in the late 1960s. A large community park was planned between a highway intersection and residential areas. Buffering noise from highways and providing quality environment for the new town were among the major planning concepts for this area. Green spaces are especially valued in a compact city form. They provide a natural balance to built form and can be developed as a green network to ensure contact with the natural world (URGE, 2004).

Traffic Organization

Vegetation and urban green spaces have roles in organizing traffic. Planning and design of urban green space have been related to the traffic network for a considerable period of time. Examples can be seen in the boulevards in European cities developed from the mid-19th century, parkways in American cities after Olmsted's designs, and recently developed greenways in many cities of the world. Public space has a fundamental function, which is to allow us to move around on foot, by bicycle, by car, motorbike or public transport. The design and management of public space need to reconcile the needs of these often conflicting modes of transport. Vegetation and green space contribute to high quality streetscapes and public space. Well-designed streets and public spaces encourage walking and cycling, and promote a safer environment by reducing vehicle speeds and use (CABE Space, 2004).

Architectural uses for planning and design

Vegetation, urban green spaces and natural landscapes have architectural values for planning and design. "Vegetation is used in defining open space and integrating the buildings to the surrounding environment. Plants form walls, canopies or floors of varying heights and densities; these are architectural characteristics. Landscape variation is created through different colors, textures, forms and densities of plants. Urban trees can direct vision,

break up large spaces, and define space. They can be used to frame scenes and to provide foreground and backgrounds for landscape features" (Tyrväinen et al., 2005, p.89). Vegetation, urban green spaces and natural landscapes "give local character and identity, provide distinctive landscape and give legibility and structure to the urban fabric" (URGE, 2004, p.14). Existing characteristics of vegetation, urban green spaces and natural landscapes can also give inspiration for planning and design. This aspect is also related to some social benefits, such as city image, aesthetics and local identity.

ECONOMIC ASPECTS

Introduction

The economic value of nature can be defined as "the total amount of welfare that nature generates for society", and which has social-economic, environmental, merit and financial dimensions (Rodenburg et al., 2001, p.106). Broadly speaking, all other benefits of urban green space have an economic component. The direct economic benefits of urban green space include values of market-priced products, such as those generated through wood production, urban agriculture and urban horticulture industry etc. However, the most relevant values of urban green spaces are their indirect economic values, and they have no market-price (Tyrväinen et al., 2005). According to current understanding, these indirect economic values include value gained by reduced costs for environmental control, energy consumption and even public health, enhancement of local and regional economy by promoting tourism and attracting investment and human resources, increased property values, improvement of business benefits through drawing customers and increasing workers' productivity. Many of these benefits ensue because of the recreational opportunity, aesthetic experiences and feeling of confidence in a locality that high quality urban green space may offer to people (e.g. CABE Space, 2004; *Economic fact sheet*, 2008; Tyrväinen et al., 2005; *Urban forest values*, 1998).

In order to provide information on the value of nature for urban development decisions, an increasing number of studies has tried to transfer these non-priced values into a priced form (e.g. Jim & Chen, 2006; Luttik, 2000; Tyrväinen, 2001). The methods for doing this include the contingent valuation method (e.g. 'willingness to pay'), the hedonic pricing method (e.g. 'housing market price'), the travel cost method, tree pricing and environmental benefit valuation (Tyrväinen et al, 2005). In an example from Guangzhou city, China, willingness to pay for recreational use of urban green space was found to be RMB 17.4 (about 1.6 EUR) per person month (Jim & Chen, 2006). Studies identified some general factors that influence the economic value of urban green space. For example, the factors that influence a park's impact on property values include security and layout,

park age, park size and maintenance (CABE Space, 2005). Good location and active management raised the average willingness to pay. Proper maintenance is important to sustaining the value of urban parks. Moreover, cultural differences also influence attitudes to urban green space and hence its value (Tyrväinen et al., 2005).

Environmental and energy savings

The amount and character of the green spaces in a city influence both the biological and the physical urban environment. Green space, if strategically placed and managed, can act as a 'living technology' and contribute to more liveable urban places. Studies in the USA have shown that because trees contribute to reducing heat-island effect, improving air quality and storm water management, provision of trees in a city can save the expenses that would otherwise be incurred for these purposes (*Urban forest values*, 1998). For example, a tree about 7.5 metres high reduces annual heating and cooling costs of a typical residence by 8% to 12%, producing an average 10 dollar savings per American household per month (*Economic fact sheet*, 2008).

Tourism and outdoor recreation

Urban open space boosts local economies by attracting tourists and supporting outdoor recreation. Travel and tourism is a fast growing industry and it provides jobs. Much of outdoor recreation is supported by parks and open space. In the USA, parks, protected rivers, scenic lands, wildlife habitat, and recreational open space help support a 502-billion dollar tourism industry (The Trust for Public Land, 1999). Commercial recreation and tourism in urban green space can bring direct income to its management organisations, through, for example, access fees to exhibition centres or special recreational facilities.

Attracting investment and business benefits

Nowadays, towns increasingly compete with one another to attract investment. Providing good parks and other public spaces becomes a vital business and marketing tool (CABE Space, 2004). A study from the USA shows that small businesses rank open space, parks and recreation as the number-one priority when choosing a new business location (Crompton et al., 1997). For retailers, a good-quality public environment can improve trading by attracting more customers, because it offers community pride and a positive perception of location (CABE Space, 2004; *Economic fact sheet*, 2008). In England, town centres improved with well-planned public spaces have up to a 40 percent increase in commercial trading and a significant increase in private sector investment (CABE Space, 2004). Moreover, employees with an outside view of green space experience less job pressure

and greater job satisfaction than those viewing man-made objects or having no outside view (*Economic fact sheet*, 2008). Psychologists have found that access to plants and green spaces provides a sense of rest and allows workers to be more productive (*ibid.*).

Increased property values
Quality green space and parks can improve property value. Studies show that the value of a property decreases when its distance to parks, greenbelts and other green spaces increases (*Economic fact sheet*, 2008; Tyrväinen & Miettinen, 2000). Many cities see redevelopment of high-quality public spaces as a regeneration strategy for an area, because improved environment can raise commercial property prices in those areas. Well-planned, well-managed public space also has a positive impact on nearby residential house prices. Studies in the Netherlands shows that a garden bordering water can increase house prices by 11 percent, while a view of a park increases prices by 8 percent, and having a park nearby raises real estate value by 6 percent. In comparison, a view of an apartment block can reduce price by 7 percent (Luttik, 2000). By helping to increase the value of homes, parks and other public spaces generate increased taxes paid to government when properties are bought and sold (CABE Space, 2005).

2.3 Urban green structure planning as a central concept

After this introduction to planning theories for the urban environment, and the benefits of urban green space, these perspectives can now be used to present urban green structure planning as this study's central concept. Urban green structure planning is about planning for optimising green space benefits. This section will first introduce some current broad scale trends, new perspectives and new approaches to urban green space planning. This is followed by an introduction and discussion of the concept of urban green structure planning. Its definition is introduced and key elements are explained. Based on this and the planning theory presented in the first part of the chapter, the study's framework for analysis is elaborated.

URBAN GREEN SPACE AND PLANNING

Urban green space becoming a planning issue
Competition between land uses is very common, and is intensive in the process of urban development and regeneration. There are often trade-off relationships between existing or potential urban green space and other land uses such as housing and infrastructure. In addition, even within the land use of urban green space, prioritizing between different functions is often needed. For example, developing an intensively used amusement park with large paved areas can conflict with the goal of preserving plant biodiversity. In

order to make these trade-off decisions, planners and decision-makers need to evaluate and consider carefully what the advantages and disadvantages of alternative options are.

Traditionally, development of urban green space has often been considered only on a local project level, e.g. at the level of an individual park. When under land use pressure, as is often the case in urban areas, green space considerations are always weak in comparison with more commercially oriented development. The concept of sustainable development suggests that development of urban green space, as well as other land uses, should be considered from socio-cultural, ecological and economic perspectives. With increasing awareness of the full range of urban green space and nature values, the status of urban green space on the political agenda seems to have been raised. However, in order to achieve some particular function (e.g. ecological functions), urban green space needs to be viewed in an interconnected way and at a city or regional scale (e.g. Handley, Pauleit & Gill, 2007). It is especially within this context that urban green space has been brought into the planning discourse.

Perspectives of green space planning

Inspired by the contemporary urban planning discourse, urban green space planners have gradually adopted the view of urban green space planning as a relational process, as a complex series of shorter 'idea-action chains' (Van Herzele, 2005). Moreover, this process cannot be separated from its social-historical context, in which both concepts and physical conditions are produced and acted upon. Planning urban green space is no longer only a technical issue, but also about politics, communication and action. It is suggested that planners, government authorities and stakeholders should all have input in green space planning practice through a communicative process. Public participation is particularly encouraged in planning and development processes of neighbourhood green space. The role of the green space planner is shifting from a technical expert to that of a mediator between different views and interests.

In academia, there has been an extensive search for new knowledge and understanding of green space in urban settings over the past 20 years. Concepts and methods from other fields have been applied in the study of urban green space. A landscape/urban ecology perspective is increasingly used for studying nature in urban settings (e.g., Kowarik & Körner, 2005); another obvious trend is the application of an environmental psychological approach to study user perceptions of urban green space for particular purposes (e.g. Kaplan & Kaplan, 1989). The involvement of different fields and professions in studies of urban green space has led to more interdisciplinary work (e.g. Konijnendijk et al., 2005; Werquin et al., 2005). These studies provide valuable indications of the benefits of urban green

space (as described in previous sections) as well as approaches that may optimize these benefits, such as the planning concepts of green ways (Hellmund & Smith, 2006), green structure (Werquin et al., 2005) and green infrastructure (Benedict & MacMahon, 2002).

These planning approaches consider urban green space as an integrative structure and they attempt to optimize many of the functions of urban green space, and incorporate new functions for such spaces. Many of these functions have been discussed above – they are often interconnected. From a social-cultural perspective, green space with a continuous structural form, for example green belts and river parks, plays an important role in the creation of a more preferred city image (Zaleckis, 2005). From an ecological perspective, a well connected green structure can help to protect, improve and create ecological corridors that enable plants and animals to move between core habitat areas. This may provide a better chance of survival for vulnerable populations (Tjallingii, 2005b). Combining green and blue (i.e. water) structures will improve both sustainable water management and quality of green space for recreation.

In summary, the past two decades have brought some major changes in green space planning and practice. The perspective of green space planning has been shifting from technical design to a relational process, while the objective of green space development has been shifting from a single function focus to multi-functionality. The scale of concern has been shifting from single green spaces to integrative urban green structure. In Europe, the so-called green structure planning approach has gradually emerged in this context.

URBAN GREEN STRUCTURE PLANNING

Introduction

In Europe, the concept of ‘green structure’ emerged during the 1980s, particularly in The Netherlands and Scandinavian countries. It has been gradually applied in both academia and planning practice ever since. The attention for urban green areas has been shifting, as mentioned above, from individual green areas to coherent spatial green networks whose quality and structure are emphasized (Tjallingii, 2003). According to this approach, a green structure “consists of all green areas of a city, private as well as public, gardens as much as areas of meadowland, woodland as much as parks or church yards, and even rivers, wetlands, ponds, etc.” (Thorén, 2000, p.362).

The green structure concept parallels the concepts of built-up structure and infrastructure. The term 'green structure' has different layers of meaning. As an *object*, green structure looks at all green and blue areas in a city, including land, vegetation and water. It focuses on the physical qualities related to each object (e.g. a park or a tree) (Lindholm, 2002). As *an integrative structure*, green structure emphasizes “the way these areas fit into

the urban fabric and are linked to one another and to other kinds of urban open space and constructions" (*ibid.*, p.43). It focuses on functional and physical relations. The overall green structure of a city is owned, planned and managed by many different stakeholders. Therefore, as a *process*, green structure planning is a sequence of activities prioritizing functions, goals and interests of urban green space for different actors with different interests (Werquin et al., 2005).

As a major output of green structure planning, the green structure plan is "a coherent package of objectives, principles and priorities for the desired quality of green areas in the public domain throughout the whole municipal territory, leading to proposals for sustainable development, with agreements about shared responsibility and finances" (Tjallingii, 2003, p.107). A green structure plan is a strategic plan based on a consensus on the main policy direction for urban green space. It aims to structure and guide the development of operational plans for concrete physical interventions in the urban landscape (*ibid.*).

Within the Dutch context, Tjallingii (2003) identified four issues that contributed to the emergence of this approach. First, the increased competition for land within cities led the usually weak green sector to find defensive strategies. It was hoped that green structure plans would "strengthen the role of green areas in urban development because they provide a structure for the network of green areas" (*ibid.*, p.107). Second, there has been growing awareness of the importance of ecological networks, water networks and the mode of non-motor transport in cities. Green structure planning is assumed to promote development of a joint strategy or plan for ecological networks, soft traffic networks and water systems. Third, realising the weak position of green functions in budgetary negotiations, the green structure plan is viewed as a mechanism to secure the integrity of a city's green areas for survival through times of financial difficulty. Finally, there is hope that green structure planning can link green structure strategy to operational projects and "improve the conditions for developing a coherent package of projects" (*ibid.*, p.108).

The concept of green structure planning is often linked to the goal of sustainable development. The normative ideal of upgrading the general role of urban green spaces in urban planning and urban development has been emphasised (Lindholm, 2002; Sandström, 2002; Thorén, 2000; Tjallingii, 2003). Therefore, in a broader context, the two important 'promoters' or driving forces of the urban green structure approach are the concept of sustainable development (see Chapter 1) and the new urban planning theories presented in Section 2.1, especially the communicative planning theory. The sustainable development approach emphasises a long-term perspective for green space planning. It suggests a multifunctional view of urban green space and the integration of green space into other urban

functions. The new urban planning theories emphasise an interactive process-oriented approach, incorporating a broader stakeholder base into planning.

Central principles
Green structure planning has several characteristics, which may be summarised in four central, defining principles:

- Multifunctionality

With the overall concept of sustainability at its roots, the green structure concept views urban green areas as being part of a multifunctional structure (Thorén, 2000). One of the tasks of green structure planning is to identify potential functions of urban green spaces and promote multifunctionality. Multifunctional green space has three dimensions. First, a single green space can provide a multitude of functions for multitiple uses. Second, the green structure of interrelated green spaces can perform functions that individual green spaces cannot perform on their own, for instance providing corridors for wildlife. Third, and closely related to this, is the notion that a single green space / structure interacts with its surrounding urban structures, which together may perform multiple functions. This last dimension is related to the concept of 'integration'. Studies have shown that most landscapes provide a multitude of functions and usually different combinations of land uses are possible (de Groot, 2006). Functions and benefits of urban green space introduced earlier in this chapter can be used as inspiration and framework for exploring functions that can be combined in a specific case.

- Integration

By stressing a 'structural' form, the green structure planning approach suggests that urban green areas should be seen in an integrative way, together with other urban structures. This integration has two aspects. It relates, first of all, to connectivity between green spaces at different scales. It also encourages the linking of each green space / structure to its higher level context, for example by taking a regional perspective for planning the green structure of a city. As discussed in Section 2.2, a connected structure may enhance the flow of matter, organisms and energy (e.g. the ecological corridor), as well as improve the connection between different types of leisure and recreational facilities (e.g. the parkway and park system). The second aspect of integration concerns the interaction and links between urban green structure and other urban structures. Looking at the totality of all green spaces as an integrative green infrastructure elevates it to a level matching that of overall built-up structure and infrastructure. Green structure, built-up structure and infrastructure are the main components of the entire

urban system (Sandström, 2002). The ecosystem concept and network theories introduced earlier in this chapter are useful for understanding the integration aspect. They emphasize the dynamics, process and interaction of different elements within the urban system. Instead of looking at 'green' and 'red' as separated entities, the new approach means that these are increasingly viewed as integrative partners (see Section 2.3). Integration often leads to better expression of the multiple functions of each structure.

- Communicative and socially-inclusive planning and management (communication)

The green structure concept highlights the important roles of coordination, cooperation and participation and the need to involve new partners into the process of decision-making (Werquin et al., 2005). Since a green structure includes various types of green spaces (both public and private, natural and culture, urban and countryside) and as it interacts with other urban structures, many stakeholders, or actors, are involved. Each actor has his or her own interests and opinions for the future of a specific area or structure. In order to realise an effect, green structure planning needs to be strategic planning. Instead of preparing a static plan, it is aimed towards achieving overall, long-terms goals, while at the same time allowing new inputs through on-going learning and discussion between different actors. On the one hand, this indicates that the process of green structure planning should be inclusive and dynamic. Besides urban green, other interests should be considered; different opinions should be involved during the process. On the other hand, this also "entails that the usual professional and political strategies of withholding and controlling information, using specific expert-language, and distinguishing the responsibilities and accountability of each actor, no longer hold" (Lapintie & Rajanti, 2001).

- Strategic (long-term oriented) approach

Green structure planning is based on a long term vision. Long term benefits of urban green space often conflict with short-term economic gains. In a weighting process between various functions of future land use, monetary economic benefits often dominate the decision-making at the expense of ecological and socio-cultural values. This often results in applying single use and limited functions to a certain area of land, even though multifunctional use of landscapes often gives higher economic benefits in the long run. The benefits from single-use landscape change usually only make narrow economic sense for private or corporate interest groups, which place the costs on a broader group of stakeholders and future generations. In the short term, these programs may be rational with respect to public or private policy

objectives. But in the longer term, they may result in both economic inefficiency and the erosion of natural services (de Groot, 2006).

As a result, the land use decision process needs to analyse the various planning and management alternatives for multifunctional landscapes, which means that many aspects need to be considered. These analytical valuation procedures must be combined with stakeholder participation techniques. This is where knowledge of communicative planning comes into play and assists the process of mutual learning and mutual understanding of the benefits and costs of land use options. Economists, ecologists and social scientists need to collaborate more to promote better insights into the trade-offs involved in land use change decisions and make their work more accessible to collaborative planning and management. In practice, decision makers, planners and the public need to communicate about the benefits and losses of different land use scenarios in a concrete sense (de Groot, 2006).

Framework for assessment

Based on study of the concept of green structure planning, I derived a set of principles, criteria, and indicators. This set aims to provide a framework for assessing the role of urban green space and green space planning and management within the context of sustainable urban development. Table 2.3 shows the main principles of urban green structure planning.

Analysis of green structure planning

In section 2.1, relevant theories and perspectives are presented for analysing the discourse and practice of urban environment planning. It focuses on three aspects of planning: ‘goal’, ‘actors and process’ and ‘outcome and impact’. This framework can be easily applied to analysis of urban green structure planning.

As a normative concept, green structure planning can also be seen within the framework of ‘goal – actors and process – outcome and impact’. The central elements of green structure planning as described above can be used as guidelines or criteria for analysis at a more detailed level. ‘Multi-functionality’ can be used for analysing the goals and outcomes of green structure planning. This perspective helps to determine whether the goals of green space planning and development have considered the main functions and benefits of green space from a sustainability perspective. ‘Integration’ can be used for analysing all three main aspects of urban green space planning. The question could be whether connectivity between green spaces and interaction between green structure and other structure have been considered at both spatial and organization levels. The ‘communicative planning’ aspect relates mainly to actors and process analysis, i.e. to determine whether the process has incorporated relevant stakeholders and whether their opinions have been considered and included. The ‘strategic

approach' aspects can be used to analyse all three aspects during the process to determine whether a long term perspective has been considered within the objectives, and whether it has resulted in tangible changes.

Table 2.3. *Main principles of urban green structure planning.*

Principles	Planning and management of urban green space (UGS) need to:
Multi-functionality	• Consider the whole set of functions/benefits: ecological, socio-cultural, structural and economic aspects (see also Section 2.2); • Consider combining different functions/uses whenever possible: multiple-functions of single green space, interconnected green structure and integrated structures; • Prioritise among functions/uses and set up clear goals through comprehensive analysis and stakeholder involvement; • Improve awareness of the multi-functions of UGS through communication and public participation/education.
Integration	• Consider physical connections between green spaces at different scales; • Consider integrating and coordinating urban green structure with other urban structures in terms of physical and functional relations (e.g. built-up structure, infrastructure, water system); • Optimise relationships through communication and negotiation between different professions, administrations and other actors.
Communicative and social-inclusive process	• Attempt to meet the needs and interests of all stakeholders; • Involve stakeholders in decision-making through coordination, cooperation between different professions, sectors at different levels, between public sector and private sector, and public participation.
Long-term strategy	• Adopt the sustainable development concept, considering long-term benefits instead of short-term economic gains; • Consider multiple uses, interactive structures and balance between different stakeholders' interests, which will help achieve a long-term goal; • Strategic planning with long-term goals, at the same time allowing new inputs through ongoing leaning and discussion between different actors.

SUMMARY

This section introduced the current trends, concepts and substantive dimensions of the European urban green structure planning approach. The 'Green structure' concept is not confined to Europe. Some related concepts originating from North America are worth mentioning. Greenways, for example, have been developed and studied in North America for many years. The greenway approach also aims to link various green spaces at the city or regional scale to enhance their multiple functions, necessitating intensive interaction and cooperation among different stakeholders (Erickson, 1997;

Erickson, 2004). The term ‘green infrastructure’ was first used in North America at the end of 1990s. It is defined as the “Nation’s natural life support system - an interconnected network of protected land and water that supports native species, maintains natural ecological processes, sustains air and water resources and contributes to the health and quality of life for America’s communities and people” (Green Infrastructure, 2008). Green infrastructure, which is now also gaining prominence as a key concept in Europe, should rank alongside ‘built infrastructure’ within a planning and design context.

The green structure planning approach provides perspectives and a framework for my case study of Weihai, China. It helped in the formulation of relevant research questions and the process of data collection analysis. Following the green structure planning approach, green structure may be seen as an object, an activity/ a structure and a process, in order to gain a deeper understanding of the status of urban green space planning in China. However, it should be kept in mind that the different layers of meaning in European green structure planning concept are not equally applicable to China due to the differences in culture and political systems. Not all the elements of the concept can be equally applied to evaluate the success or failure of planning and development of urban green space in China. Chinese cultural, social and political context inevitably influences the practice of urban green space planning. The next chapter introduces the background of urban greening in China.

2.4 Research questions

This study has sought to answer the following questions:

1. What is the importance of urban green space in a rapidly developing Chinese city like Weihai? What is the current status of urban green space planning and development in Weihai?
    - What are the main arguments for planning and developing urban green space? What are the overall goals articulated in the planning documents? Are these in line with the interests of different stakeholders?
    - How has urban green space been planned and developed? Who are the main actors in this process and how do they interact with each other? Are the key stakeholders involved in urban green space planning at various planning levels?

   - What are the outcomes and impacts of urban green space planning and development? What greening activities have taken place? To which changes in the physical urban environment have they led? What has been the influence of these greening activities and changes on the city and its citizens?
2. What are the main problems and critical issues for urban green space planning and development in Weihai? What are the underlying issues influencing urban green space planning in Weihai and in China at large?
3. How does the status of urban green space planning and development in China relate to the international discourse on urban green space planning, in particular from the perspective of sustainable development? What are the similarities and differences between the Chinese approach to urban green space planning and the green structure planning concept in Europe? Can these approaches benefit from each other and if so, in what respects?
4. Based on the above, how can urban green space planning and development in Weihai and in China at large be improved to contribute to a more sustainable city development?

3. METHODOLOGY

This chapter presents research methods and techniques applied for gathering and analysing data in order to answer the research questions developed in Chapter 2. The chapter starts with choice of research strategy and research design. Then criteria for selecting cases are introduced, followed by an outline of the case and its context. Next, the chapter presents the methods and techniques used for data collection. Finally methods of analysis and criteria for interpreting the findings are introduced.

3.1 Research strategy and research design

CASE STUDY STRATEGY

The practice of urban green space planning and development is multi-faceted and dynamic. It must be analysed and understood within its real-life context. According to the aims of this work and specific research questions, the case study method is considered suitable as the main strategy for this project. The case study approach is appropriate when "a 'how' or 'why' question is being asked about a contemporary set of events over which the investigator has little or no control (Yin, 2003, p 9.). The case study approach has become an increasingly preferred strategy in planning research, and its strength has been confirmed (e.g. Greenscom, 2007; Werquin et al., 2005). The case study strategy facilitates understanding of complex social phenomena. It allows investigators to retain the holistic and meaningful characteristics of real-life events. Moreover, it deals with a full variety of evidence including documents, artefacts, interviews, and observations (Yin, 2003), which all fall under the nature and needs of planning studies.

As a research strategy, the case study approach has the following characteristics (Yin, 2003, p13.):

1. A case study is an empirical inquiry that
   - investigates a contemporary phenomenon within its real-life context, especially when
   - the boundaries between phenomenon and context are not clearly evident.
2. The case study inquiry
   - copes with a technically distinctive situation in which there will be many more variables of interest than data points, and as one result;
   - relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result;
   - benefits from the prior development of theoretical propositions to guide data collection and analysis.

RESEARCH DESIGN AND PROCESS

Research design guides the investigator in the process of collecting, analysing, and interpreting observations. The study is concerned with both the substance of urban green space planning and its implementation process, and how these relate one to the other.

Theory development is essential in the research design phase of a case study (Yin, 2003). Based on a 'theory' of what is being studied, the research design will provide strong guidance for which data to collect and the strategies for analysing data. The theoretical development of this particular study comprised both a theory of sound urban green space planning and a theory of its implementation. An overview of relevant theories and concepts for both dimensions provides a framework of how the topic of urban green space planning is studied.

Given the limited time and resources for this project, and in order to nevertheless undertake the type of in-depth study needed for analysing a complex green space planning circumstance, the decision was taken to opt for an embedded, single-case design (Yin, 2003). Urban green space planning and development of Weihai city was identified as the case and thus as main focus of analysis (see Section 3.2 for case selection). During the very early investigation stage, it became clear that, when discussing the urban greening issue at the city level, the interviewees often reflected on concrete greening projects. This supported the decision to use an embedded case design. The sub-cases at the project level are concrete examples that illustrate the issues of urban green space planning. They also offer good opportunities for analysing and understanding the relationships between the 'parts' (i.e. specific greening projects) and the 'whole' (green structure planning at a city scale). Eleven sub-cases were chosen for this study (see Section 3.2 for case selection).

The entire study was structured as follows (see Figure 3.1):

1. *Elaboration of the theoretical framework*, which is based on international concepts (mainly related to the urban green structure planning approach) as well as on key elements of the Chinese approach to urban green space planning and development (mainly urban green system planning). This part of the work was based largely on literature study. In addition, during April 2004 a study trip was made in China aimed at gaining better understanding of the Chinese 'greening' approach and case selection. During this trip, academic seminars and discussions were held with Chinese researchers dealing with urban green system planning and urban greening in China.

2. *Case study investigation of urban green space planning and development in Weihai city*. The case study included two steps: first, an investigation at

the city level to gain an overview and refine the focus of the study, and secondly, a more in-depth study at the city level and 11 sub-cases at the project level. Two major study trips were conducted for these two steps during October / November 2004 and August 2006 (3 weeks for each trip), respectively. In addition, a short intermediate study visit to Weihai was conducted during late November 2005 to follow up the process of urban green space development in the city.

The case study of Weihai consisted of the following activities: 1) initial communications with the City Park Administration to set up the visit and elaborate the agenda of the investigation (in order to get support through local coordination), 2) field visits to the various main types of urban green space, 3) collecting planning documents about urban greening, 4) semi-structured interviews with key actors in urban green space planning and development in Weihai, and 5) participating in reporting meetings within urban planning and design processes for urban green space. After the study trips, documents collected and interview scripts recorded were analysed. During the analysis process, additional information was obtained and further informal interviews were made by telephone and via internet.

3. *Analysis of the status of urban green space planning and development in Weihai* (based on analysis of data from previous stages and literature study). A preliminary analysis was made during spring 2006 and the investigation's framework was adjusted. The analysis included identifying goals of urban green space planning based on planning document and interviews with key players, gaining insight into the urban green space development / implementation process based primarily on interviews, and analysis of the outcomes of planning and development based on both statistical data and on-site observation. Using the analysis, the strengths and challenges of the Weihai urban green space planning and development approach were discussed within the theoretical framework of the project. Further literature study supported the discussion.

4. *Synthesis* to bring the different parts of the analysis together: using findings from the Weihai case to draw some more general conclusions on the status of urban green space planning (in China) and provide suggestions for improvements.

GENERALIZATION ISSUES

For studies consisting of a single case, a key methodological question is how to generalise findings. Specifically, for this project, the question arises as to whether the status and approach of urban green space planning and development in China can be drawn from the findings of a single case—Weihai city.

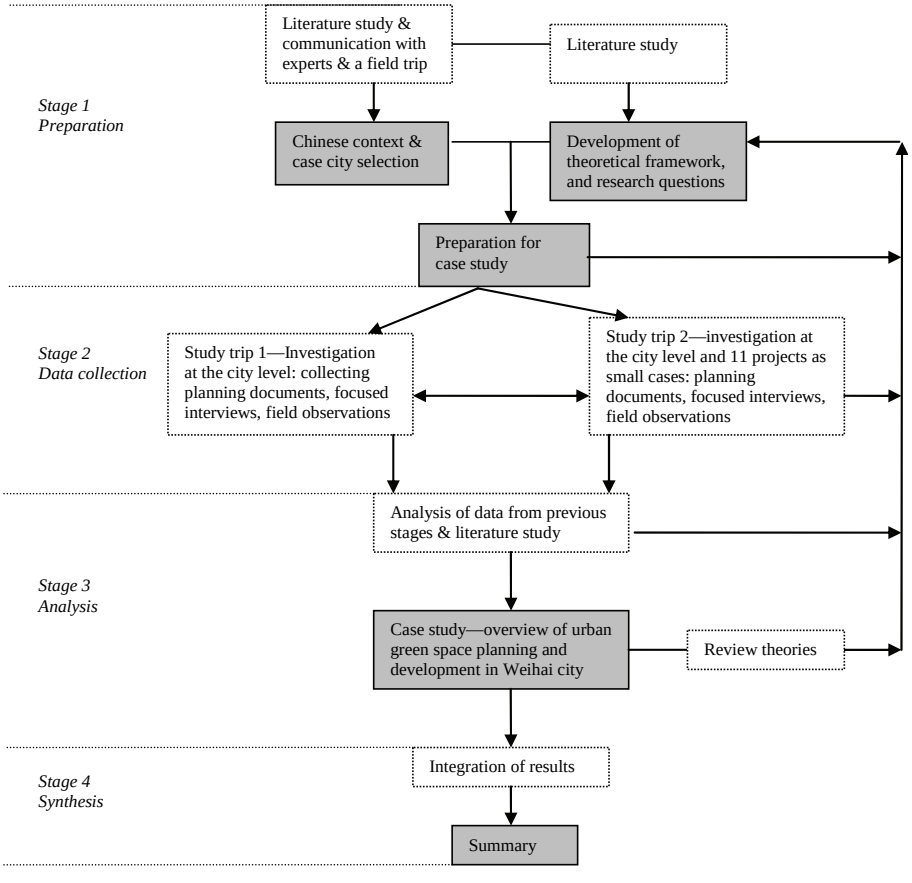


Figure 3.1. *Schematic of the research design and structure.*

The issue of generalization has been expertly discussed by many who are proponents of case study research. Both Stake (2000) and Flyvbjerg (2004) emphasise the value of an experiential and contextual based case study for one's learning process and knowledge construction. Both argue that formal generalisation is often overvalued, while case study as an intrinsic particular or 'the force of example' has been given too little credit. "Formal generalization is only one of many ways by which people gain and accumulate knowledge. That knowledge cannot be formally generalized does not mean that it cannot enter into the collective process of knowledge accumulation in a given field or in a society. A purely descriptive, pheno-

menological case study with any attempt to generalize can certainly be of value in this process and has often helped cut a path towards scientific innovation" (Flyvbjerg, 2004, p.424).

Stake (2000) distinguishes between an 'intrinsic case' and an 'instrumental case'. The former is studied because the case itself is of interest, whilst the latter is studied mainly in order to provide insight into an issue or to redraw a generalization. Stake maintained that even in an intrinsic case study, researchers can not avoid generalization—they just generalize at times yet to come and in other situations. "Even intrinsic case study can be seen as a small step toward grand generalization (…). Damage occurs when the commitment to generalize or to theorize runs so strong that the researcher's attention is drawn away from features important for understanding the case itself" (Stake, 2000).

Flybjerg (2004, p.425) suggests that "one can often generalize on the basis of a single case, and the case study may be central to scientific development via generalization as supplement or alternative to other methods." He also states that strategic choice of case may greatly add to the generality of a case study (Flyvbjerg, 2004). Johansson (2004, p.215) says about this issue: "If the unique case is analytically selected (…), it is possible to generalize analytically from a single case." For example, by studying a critical case, it is possible to generalize in terms that 'if it is valid for this case, it is valid for all cases'.

The present study treads a middle ground on the issue of generalization. Weihai city as a case is not an 'intrinsic case'. It was chosen deliberately as an 'instrumental case' in order to draw some kind of generalization. However, attention was given not only to generalization, but also to knowledge building. It is hoped that this particular context-bonded, in-depth study can provide insights for and contribute to knowledge development of urban green space planning as a whole, with particular emphasis on China. The next section (Section 3.2) will elaborate more on generalization in relation to case selection.

3.2 Case selection and defining the case

CASE SELECTION

There are various rationales for choosing a single case. The rationale could be that a single case is chosen as a 'critical case', an 'extreme case', a 'typical case', a 'revelatory case', a 'longitudinal case' or a 'paradigmatic case' (see Table 3.1) (Flyvberg, 2004; Yin, 2003). Flyvberg (2004) suggests that an extreme case or a critical case is a better strategic choice rather than a typical case. "When the objective is to achieve the greatest possible amount of information on a given problem or phenomenon, a representative case or a random sample may not be the most appropriate strategy. This is because

the typical or average case is often not the richest in information." (Flyvberg, 2004, p.425). Stake (2000, p. 446) emphasises that potential for learning is of primary importance in choosing cases, and it is sometimes a superior criterion to representativeness: "Isn't it better to learn a lot from an atypical case than a little from a seemingly typical case?"

Table 3.1. *Strategies the selection of a single case.*
Sources: Flyvberg (2004, p.426); Yin (2003, p.40-42).

Type of selection	**Purpose**
Critical case	To gain information that permits logical deductions of the type, 'if this is (not) valid for this case, then it applies to all (no) cases'.
Extreme case	To obtain information on unusual cases, which can be especially problematic or especially good in a more closely defined sense.
Typical case	To capture the circumstances and conditions of an everyday or commonplace circumstances.
Revelatory case	To observe and analyse a phenomenon previously inaccessible to scientific investigation.
Longitudinal case	To specify how certain conditions change over time, by studying the same single case at two or more different points in time (the desired time intervals need to be selected).
Paradigmatic case	To develop a metaphor or establish a school for the domain that the case concerns.
Maximum variation cases	To obtain information about the significance of various circumstances for case process and outcome, e.g. three to four cases that are very different on one dimension: size, form of organization, location, budget, etc.

For choosing 'cases within the case', as done in this study for the sub-cases, Stake (2000) suggests that choices should be made by assuring variety (but they need not be representative), without strong argument for typicality, and by considerations of access and even hospitality, because time is short and too little can be learned from inhospitable informants.

Criteria and selection of the case city

China covers a vast geographical range and the cultural and historical variations among Chinese cities are large. Therefore, it would be almost impossible to find a Chinese city that can act as a 'typical case' representing all other cities. In addition, choosing an 'average' case might lead to opting for a city with very few greening issues to study, since the level of urban greening practice varies a great deal among Chinese cities. A 'critical case' is most suitable for testing a well-formulated theory or hypothesis by either clearly confirming it or irrefutably falsifying it (Flyvberg, 2004). Study of the status of urban green space planning in Weihai is more likely an exploratory study than a theory-testing study. Therefore the logic of a

'critical case' was not suitable for this study. In China, 'National Garden Cities' are considered the best models for urban green space planning and development practice. They are more likely 'extreme cases' with rich information, which could provide great potential for this study. A rather 'progressive' city with 'rich' information makes it possible to study state-of-art of urban green space/system planning in China.

In discussions about urban space planning and case cities with Chinese experts and professionals, as well as during the first site visit, Weihai City was identified as a suitable case. The following criteria were used when choosing Weihai:

- It is one of the 'National Garden Cities' in China. 'National Garden city' is an honour given by the central government to those cities where urban greening has reached a certain standard. Garden cities have comparatively more activities concerning urban green space planning and development and thus offer a 'richer' information basis for the study.
- It is a rather small city (0.5 million inhabitants), making it possible to conduct an in-depth study from the perspective of the entire city, which is believed important for sound analysis of urban green structure planning - and within the time frame and resources of the study, something that would have been difficult for a larger city.
- It was an 'accessible' case, as the key institutions in the city reacted positively towards this study and were willing to help.

Weihai is likely an 'extreme case'—it is one of the earliest 'National Garden Cities' in China, considered as best examples both in terms of status of urban green space, and urban green space planning and development practices. It is therefore also an 'information rich' case, which adds value to the study. The object of study was not merely the physical urban environment (which is unique for every city), but rather the approach to urban green space planning. The top-down Chinese planning system suggests that planning and the urban greening approach of cities follow the general framework of national policies. It is hoped that the urban green space planning approach of Weihai City might represent (at least partly) some major characteristics of current urban green space planning in China.

Criteria for selecting the sub-cases

Extensive urban green space development in Weihai started around 1997. Accordingly, the time frame for selection of the sub-cases was set between 1997 and 2006. The selection was intended to cover the variety of the green space development types and different types of green spaces in Weihai, i.e. city park, road greening, urban woodland, institutional green space, and so forth (see 'Standards for Classification of Urban Green Space', Annex 5,

Table A5.2). It was hoped that a best case and a typical case would in combination present the status of urban green space development at the project level. During the preparation of the case study, the following criteria for selecting the sub-cases were set:

- Developed between 1997 and 2006.
- Representing different types of urban green space and different ways of development.
- The best example (an extreme case) and a typical case of each type.
- Accessibility of data.

The final decision on the selection of sub-cases was made during the study trip to Weihai. In dialogue with professionals of the City Park Administration of Weihai, 11 sub-cases were chosen. The major challenge for the selection process was that a distinction between 'best' cases and typical cases was not always clear. All the sub-cases suggested by the local practitioners were regarded as best cases by the author. According to the locals, however, concepts and practices for green space development are developing so fast that the existing best examples will soon become 'typical', setting a standard for new development. Therefore, the criterion was adjusted to include two or three best examples from each of the major types of green space development in Weihai, for example public parks, road greening, institutional green space and other types of public green space (e.g. urban woodland) and private green space. Categorization into major types of green space development was based on the actual major urban green space development activities, instead of the national 'Standards for Classification of Urban Green Space'. In addition, accessibility of data and providers of information once again became the primary criterion for selecting the sub-cases (see Chapter 5, Table 5.1.1 for a list of the sub-cases.).

THE CASE AND ITS CONTEXT—DEFINING THE CASE

Any chosen case is a complex entity operating within a number of contexts—physical, economic, ethical, aesthetic, and so on (Stake, 2000). A characteristic of the case study is its aim to analyze contextual conditions in relation to the case, and often the boundaries between the case and the context are not clear (Yin, 2003). However, Yin (2003) suggests that defining the case and clarifying the unit of analysis are important in order to decide upon the limits of data collection and analysis. One must distinguish what is within the unit of analysis (the immediate topic of the case study) and what is outside it (the context for the case study). The case and its context can be distinguished by boundaries based on thematic content of the investigation, geographic area and time. For this study, the historical,

geographical, social and cultural context of the city were crucial for understanding urban green space planning and development. Definition of the case and its context are defined below.

The case and its context based on the content of the study
Planning and development of urban green space in contemporary Weihai was the single case for this in-depth case research. Important issues for investigation included goals and instruments (or green space planning and development), interaction among the actors/stakeholders in the planning and development process, activities and outcomes of urban green space planning and development practice, and existing problems and challenges related to the goals of sustainable urban development in Weihai. Since the study chose an embedded case design, some green space development projects were the subunits of the case (sub-cases). However, the city level was the major focus of the study (the unit of analysis).

The context of the case has two layers. The first layer is the specific Chinese context, which influences planning and development of urban green space. It includes the social and cultural background, the planning system, administrative structures, national or provincial policy and tools for urban green space planning and development. Examples of national policy and tools are 'National Garden City' awards, urban green system planning, and regulations for urban greening. This national context should provide further explanation of why things happen as they do in Weihai city.

The second layer is background characterisation of Weihai city and its vision of development, its historical storyline of urban green space development, organizations, the planning system, and planning activities and debates. It is especially difficult to separate this part of the context from the case. During data collection and analysis, the most relevant issues related to urban green space were included in the case, while the general background regarding the planning system and planning activities were seen as case context.

The case and its context (based on the geographical city boundary)
In the Chinese planning context, a city can be defined by several boundaries. From inner city to suburban areas, there are boundaries defining the built-up city, city planning area, city administration area, and regional city. Until recent years, statutory urban green space planning and development concentrated on the built-up area (developed area) of the city, including areas within the boundary of the planned built-up city. The new national guideline for urban green space system planning requires focus on the regional city scale (*Ministry of Construction*, 2002).

Weihai is the central city of a city region that includes three other county cities. The built-up area of Weihai city is clearly separated from those of

other three. Weihai's administrative power is also indirectly extended to cover the county cities. Therefore, study at a regional city scale is not always relevant in the case of Weihai. Initially, the decision was taken to concentrate on the administrative boundary of Weihai, which is also the boundary of the planning area of the city used in the Master Plan of Weihai 2004 (see Figure 5.3.2 in Chapter 5). How the city's green structure links up to a higher level (that of the city region), and the way in which the city administrative status is related to greening links up to higher governmental levels are considered part of the context of the case study.

At a later stage in my work, supporting opinions were expressed for my choice of urban green space planning boundary. Some Chinese scholars argue that urban green space planning should focus more on the city planning area in order to keep the planning and implementation at an appropriate level (e.g. Zhang, 2006). Planning at the regional city level is only feasible for some metropolitan areas, such as Beijing, Shanghai and Tianjin, where the city's administrative power extends to the regional city scale.

The case and its context based on time span

The temporal scale of this study focused mainly on current circumstances of urban green space planning and development. The case includes about ten years of rapid green space development, planning process and activities (1997 to 2006). Sub-cases at the project level were chosen as projects developed within this time frame. Plans in 1994 are also included in the case study, however, as they influenced outcomes in the most recent ten years. Earlier stories and plans are part of the case context. However, it must be pointed out here that the historical context of green space planning and development are also extensively covered in the case study in order to provide background information on conditions upon which the current development is based, and to provide a contrast between the present status of urban green space planning and historical circumstances.

3.3 Methods for data collection in the case study

A major strength of case study data collection is the opportunity to use multiple sources of evidence, in order to facilitate a process of triangulation, by which the sources of evidence provide multiple measures of the same phenomenon (Yin, 2003). From the six most commonly used sources of evidence in case studies introduced by Yin, I used mainly evidence from documentation, interviews, physical artefacts and direct observations. The research design did not include data collection from archival records, nor participant-observation, primarily because of time constraints on data collection in the target city. Accordingly, multiple methods were applied to

data collection, including informal communication with local people who have knowledge about urban green space issues, semi-structured interviews, field visits to urban green spaces, and observations in different organizations as well as during reporting meetings for plans and proposals.

This section will first introduce the data collection strategy in relation to the research questions, followed by an overview of data collected. Then interview techniques and process are presented. Finally challenges during data collection are discussed.

DATA COLLECTION STRATEGY

Prior to study trips in Weihai, a preliminary plan was made for data collection (see Annex 1). In order to identify relevant data and data collection methods, each research question was broken down into several analytical questions, which further pointed to data to be compiled. The analytical questions and subsequent data collection and analysis were grounded in the theoretical framework of the study.

Documents and interviews were the two major sources of evidence for the case study. A detailed overview of interview technique and process are introduced later in this section. The principle of data collection was to assemble, as far as possible, relevant documents, plans and maps in all forms i.e. as printed versions, computer documents, and CDs. A list of potential documents was provided to the local coordinator of the project (the City Park Administration), who further coordinated with the organizations that possessed the documents. Clues about relevant documents were also acquired during interviews with the actors.

Field visits to urban green spaces were made to gain an overview of implementation of urban greening and to analyse the selected sub-cases. Guidelines were prepared for a systematic analysis of the sub-cases. However, it emerged during the field visits that the size of each green space was too large to allow a detailed landscape analysis within the relatively short time available. Finally, observations during the field trips were mainly kept at a general level. Main elements and functions, of the green spaces as well as their relationships with their surroundings were observed. Photographs were taken during all field visits. Each sub-case green space was visited twice.

Direct observation did not produce many concrete data for the case analysis. It did create, however, vivid experiences of concrete planning circumstances used for triangulation with the information provided by interviews, documents and field visits. Direct observations included experiencing the working settings of the relevant organizations, informal communication with the employees, and participating in planning meetings as an external observer.

OVERVIEW OF THE DATA

Data were primarily collected during two three-week study trips to Weihai. The first trip, during October/November 2004, focused on gaining a general understanding of Weihai's green space planning and development at the city level. Interviews focused on the key public actors from relevant administrations. The second trip (August 2006) mainly focused on in-depth study of green space development at the project level, but a broader perspective (than the public sector) at the city level was also included. Interviews were extended to a broader range of actors within both the public and private sectors. In addition to actors relevant to urban greening at the city level, actors for planning and development of specific urban green spaces (the sub-cases) were also interviewed. Table 3.2 gives an overview of data collected during the two major study trips.

Table 3.2. *Overview of data collected during the two major study trips to Weihai.*

	Documentation	**Interviews**	**Artefacts**	**Direct observation**
City level	City plans (1978, 1994, 2005), Urban Green System Plan (1995, 2002, 2006), Other documents, maps, aerial photos, photos available.	24 interviews with the relevant Administrations and other actors (each interview between 30 and 120 min) (2 key informants were interviewed twice).	Photos taken during tours both by car and on foot, Notes on maps.	Study notes
Project level (11 projects)	Plans and documents, Photos available	11 formal interviews, others combined with interviews at the city level.	Photos, Notes on map or plan.	Study notes

INTERVIEW METHOD

In China, many aspects of urban green space planning and development are not documented, especially those concerning planning and development processes. Interview data are thus crucial for a sound case study. Semi-structured interview were used.

Before the visits to the case city, interview questions were developed based on the research questions and analytical questions (for the interview design, see Annex 2). Most of the interview questions were open-ended, which allowed interviewees to better develop and express their own opinions. Public organisations, professions and potential actors relevant to urban green space planning and development were asked to propose interviewees. The choice of key interviewees was made during the field trip together with experts from the Weihai City Park Administration who assisted with

coordinating with other organizations and making initial appointments with interviewees. Coordination by an official local organization, in this case the Park Administration, was deemed necessary in order to get in contact with key persons and conduct the interviews. Most of the interviewees were reached through good formal work networks and good personal networks on behalf of the Park Administration. Only few interviews were made without coordination by the Park Administration, for example the interviews with NGOs, whose contact information were found through the internet.

In total, 35 interviews were held. Several key actors were interviewed during both trips. A list of interviewees is provided in Annex 3. An attempt was made to include representatives from the following groups:

1. Politicians—2 interviews.
2. External experts (from universities, research institute or planning and design institute)—2 interviews.
3. Local practitioners with knowledge of urban green space—19 interviews. Among these:
   A. Public sector—12 interviews;
   B. Semi-public sector—5 interviews;
   C. Private sector—2 interviews
   These were managers of key bureaus working with urban green space (e.g. City Park Administration; City Planning Bureau; City Forest Bureau), landscape architects, planners, green space constructors).
4. Local practitioners with less specific knowledge of urban green space—5 interviews
   These were managers of relevant bureaus (e.g. Tourism Bureau; City Municipal Work Company), managers in urban green space development projects.
5. Commercial sector (e.g. private real-estate developers, private enterprises) —2 interviews.
6. NGOs and interest groups—3 interviews.
7. The general public—1 interview.
8. Media—1 interview.

Few interviews were held with representatives of the commercial sector, NGOs and the media. This was primarily because the Park Administration has limited contacts and cooperation with these groups of actors. Politician at the city level were also difficult to reach due to their busy schedule and the limited political culture for supporting independent research. The vice-director of the City Construction Committee was the top ranking figure among all the interviewees – in this study he was considered a politician. Another politician interviewed was the Communist Party's general secretary of a local village within Weihai city's administrative boundaries. It was not

the intention of this study to undertake a comprehensive survey of the general public's use of or preferences for urban green space. In spite of the limited number of interviews from these groups of actors, they did provide valuable perspectives about urban greening issues in Weihai.

Mostly, the interviews were held with only one person at a time; only three interviews were held with two people present at the same time. During the interview, a list of interview questions was used to guide the interviews. The length of the interviews ranged between 30 minutes to 2 hours. All formal interviews were recorded with a digital recorder. During the first major study trip in 2004, interview notes were made in Chinese immediately following the interviews. Confirmation of the interview notes by the interviewees was done when possible during the study trip. The interviews during the second major study trip in 2006 were not transferred into interview notes, due to time constraints and the intensive schedule during the trip, and thus these notes did not go through the confirmation process. Interview notes were made immediately after the study trip, based on the recorded information.

During the case analysis and writing process of the study, addition informal interviews were conducted by means of telephone calls and e-mail correspondence concerning some ad hoc questions. The interviewees in this case were a few key actors identified as most informative during earlier, formal interviews.

Most interviewees responded positively and seriously to the questions. Most were open-minded in expressing both their positive and negative opinions during the interviews.

CHALLENGES TO DATA COLLECTION DURING THE CASE STUDY

Even with the help from the City Park Administration as coordinator, access to government planning documents was limited. For example, only the Master Plans of Weihai for 1978, 1994 (partially) and 2004 were collected. The author was informed that older versions of the Master Plan of Weihai had been lost. However, the Master Plan 2004 did include an analysis of earlier Master Plans. Maps that provide relatively precise information about urban green space were not available, especially those that with information about the urban green space situation during earlier years. In the City Planning Bureau, the earliest available aerial images of Weihai are from 2001. These photos were treated as a 'national secret' for internal use only. A special agreement was made with the data provider that the aerial photos would be only used for intermediate analysis for the PhD project, and it would not be printed one way or another.

In some cases, potential interviewees refused to be interviewed, even after intercession by the Park Administration. The reasons for refusal included existing conflicts with the green sector, showing no interest, and

being afraid of ‘unpleasant involvement’. For example, a park manager in the High-tech Zone refused the interview as he had been criticised by his leader for an earlier interview in the local media. Attempts were made by the author to make direct appointments with potential interviewees from private sectors, but these were often unsuccessful.

Another challenge during the study trips was the difficulty of handling the working schedule because of local custom and working culture. It was almost impossible to make a plan two days ahead. For example, most appointments for interviews were made in the early morning on the day of the interview. Some appointments were even made half hour before the interview. Appointments that were made rather early always ran the risk of being cancelled. This seemed to be a widely practised working approach in Weihai—everyone could be busy, at the same time everyone could be flexible. The study trips in Weihai therefore had to adopt a very flexible approach. Although there were plans before the study trips, both the contents of the investigation and the time schedule needed to be adapted to ad hoc circumstances. However, I believe the plans for the study trips were still of a great value, as they did provide guidance and focus for the field work.

3.4 Methods of analysis and criteria for interpreting the findings

The general analytical strategy of this study was based on a theoretical proposition that both statutory planning and diverse actions during the implementation process influence actual urban development, and should therefore be subjects of the planning study. The case analysis was intended to display the causal links among statutory planning, implementation process and actual urban green space development.

FRAMEWORK FOR ANALYSING THE URBAN GREEN SPACE PLANNING PROCESS (Goal – actors and process – outcome and impact)

The general analytical framework of the case study was much inspired by some policy analysis approaches, for example the three aspects (policy output, policy outcome and policy impact) of policy process and the framework ‘policy arrangement’ for policy analysis. At the same time, the special characteristics of planning were considered, for example the importance of the physical and spatial urban environment. Three aspects were identified as crucial for understanding planning and development of urban green space: first, ‘goal’; second, ‘actors and process’; and third, ‘outcome and impact’ (see also Chapter 2, section 2.1).

Applied to the study of urban green space planning, ‘goal’ is about what green space functions the city pursues – it is about stating the purposes of green space planning and identifying the instruments by which the purposes will be achieved. The analysis of goals of urban green space planning and

development was conducted through discourse analysis. Discourse includes both the statutory planning discourse and the discourse on planning the actual development. The former was mainly based on the text and maps of planning documents, whilst the latter was mainly based on interviews. It is necessary to be aware of the fact that the objectives of urban green structure planning written in the plans may differ from the objectives of urban green space development in practice. In the field of green space planning, the process from concepts and ideas to actual implementation on the ground often spans a considerable period of time. It is a complex process instead of a direct idea-plan-action chain (Van Herzele, 2005). Sometimes ideas can directly influence action, and from time to time the action may be reflected and articulated in plans. Analysing the dialogues of actors can help identify these implicit ideas that have real impacts on action.

'Actors and process' is about how the different actors with different interests interact with each other to plan and develop urban green space. This aspect is also concerned with both statutory planning and planning in practice, including the different planning activities for single green spaces and their implementation. The analysis of process was mainly based on interviews, which were cross-checked by the author's direct observations during the study trips. Fragmentary data about actors and processes can also be found in documents. Through examining actors and processes of green space planning and development, the actors' particular interests in urban green space and the power relations between them can be discovered. With perspectives from both statutory planning and practice, the analysis of actors and process can offer some explanations about how urban green spaces became what they are and about why there are differences between goals and outcomes.

The 'outcome and impact' analysis of urban green space planning includes greening activities resulting from green space planning, changes of urban green space brought about by these activities (what kinds of urban green spaces were really developed) and the benefits the city and its residents ultimately get. The analysis of outcome as greening activities was based both on internal government documents and interviews. The analysis of outcome as concrete (new) urban green spaces was based on direct observation of the green spaces, as well as statistical data and maps pertaining to urban green space development. For the outcome as impact of green space planning on city and people, the analysis was mainly based on interviews. Through 'outcome and impact', goals written up in plans and communicated by actors can be seen in a concrete term, so long as they are realised.

FRAMEWORK FOR ASSESSMENT AND INTERPRETATION

(Principles—criteria—indicators and the Chinese background)

For interpretation of the data, suitable criteria are important for understanding relevant issues and making judgements. During the development of the theoretical framework through literature study of relevant theories and approaches of urban green structure planning, a framework for assessment (a set of principles, criteria and indicators) of urban green structure planning was developed (see also Chapter 2, Section 2.3). The framework of assessment with a set principles, criteria and indicators covers the aspects and considerations required for urban green space planning with sustainable development as an objective. It was used as guidance for the case study, for example in directing data collection and interpreting data during the case analysis.

Cultural and traditional differences affect aesthetics, attitude to nature, and use of urban green space. The major differences in political systems affect the planning and management of urban green space as well. It is hoped that by introducing the Chinese background (see Chapter 4), additional criteria for interpreting the data can be derived, which will improve the validity of the research design. Thus, although the theoretical framework is primarily based in a western context, it is valid for a Chinese case study.

The two frameworks (‘goal—actors & process—outcome & impact’ and ‘principles—criteria—indicators’) used for the case study have interrelationships. However, they are used in different ways and at two different levels. The analytical framework ‘goal—actors & process—outcome & impact’ is organized in a more practical manner based on real socio-spatial events. It is used as the main structure of the case analysis and case presentation. The framework for assessment of ‘principles—criteria—indicators’ is organized in a more theoretical and abstract way based on different perspectives to urban green space planning. It is used for ‘interpretation guidelines’ throughout the case analysis. The discussions therefore mainly follow the major themes of the principles (multi-functionality, integration, communicative and social-inclusive process and strategic approach) (see Chapter 6).

4. BACKGROUND OF URBAN GREENING IN CHINA

4.1 Introduction

This chapter provides an overview of the general context for urban green space planning and urban greening in contemporary China. First, the historical and culture background of urban greening is introduced with particular reference to the influences of Chinese mountain and water culture, and the Chinese garden tradition on urban planning and urban construction. Then, an overview of discourses on urban planning and urban greening in contemporary China is provided, with a focus on the current discourse and approach to urban green system planning. The statutory planning system for urban greening is introduced next, including the statutory urban planning system and the main regulations and organizations for urban green space planning. Finally, a summary is provided with the key points presented in this chapter.

4.2 Cultural & social background of urban greening

Culture refers to "all the behaviors, ways of life, arts, beliefs and institutions of a population that are passed down from generation to generation" (Wikipedia, 2008). The culture of a society influences the way in which people develop their living environment—cities, buildings and green spaces. A contemporary city and the way of life in it are very different from those of the past, because civilization develops over time. However, some basic aspects of a culture are passed down from generation to generation and reflected in the present city and ways of life.

This section is based on the belief that understanding the Chinese urban planning and construction tradition from a historical perspective will facilitate study of contemporary urban green space planning. The section starts with a short introduction to Chinese philosophy in relation to ancient urban planning. Then two major influences of the ancient culture are introduced. One is that of the Mountain and Water culture and its influence on urban planning. The other is the Chinese garden tradition and its influence on urban green space.

MOUNTAIN & WATER CULTURE AND ITS INFLUENCE ON URBAN PLANNING

Philosophy and urban planning

Confucianism, Taoism and Buddhism constitute the essence of traditional Chinese culture. Even though they have had a relationship of both contention and complementation in history, Confucianism has played the more dominant role. Confucianism is a complex system of moral, social, political, philosophical, and quasi-religious thoughts that has had tremendous

influence on Chinese culture and history. The goal of Confucianism is social harmony, which may be achieved by keeping a society with order. For that, Confucianism stresses benevolence or love *(ren)* and rites *(li)*, referring to respect for the system of social hierarchy. It promotes human morality and good deeds, such as politeness, personal and social duties, and loyalty and humanity. While juniors are considered to have strong duties of reverence and service to their seniors, seniors also have duties of benevolence and concern toward juniors. Taoism refers to a variety of related Chinese philosophical and religious traditions and concepts. Taoist propriety and ethics emphasize compassion, moderation and humility. Taoist thought focuses on 'non-action' *(wu wei)*, spontaneity, humanism and emptiness. An emphasis is placed on the link between people and nature. According to Taoism, this link lessens the need for rules and order and leads one to a better understanding of the world (*Confucianism, Taoism and*, 2008; Wikipedia, 2008).

Philosophy and culture have their spatial expression in Chinese cities and urban planning. It is often believed that Confucianism in particular had a major influence on urban planning, architecture design and even interior design in ancient China (Wu, 1999; Zhang, 2002).The representation of Confucianism in urban planning was reflected in the search for regularity, order and hierarchy in urban form, which can be seen in the symmetrical planning model of most imperial cities. This urban planning model first emerged in the Shang Dynasty (from c. 1600 BCE) as a means of ensuring social order and political control within the Chinese state as a whole. Until the Han Dynasty (206 BCE–220 CE), an elaborate structural and organizational ideal was established that has had a major influence in the development of all subsequent traditional cities in China.

Some scholars suggest that in addition to Confucianism, the Chinese mountain and water culture was also an important influence on urban planning in ancient China (Wang, 2002). The mountain and water culture is especially related to Taoist thought. This culture was striving for asymmetry and being in harmony with nature, which can be seen from the locations of a range of ancient Chinese cities and the relationships between cities and their environments.

Two tendencies in urban planning often co-existed in ancient Chinese cities: within the city wall, the layout of the streets and districts was full of order, symmetry and hierarchy. Beyond the city wall, the city surroundings would take a free layout and fit nicely into the natural environment. One can see another example of this co-existence in a classic Chinese garden. The residence part often has a regular, ordered layout, while the garden part often shows an irregular layout with hills and waters providing the main structures. In contemporary urban planning of China, especially in an era emphasizing the urban environment, the influence of the mountain and water culture has

gradually been surpassing that of the symmetry planning model, although the latter also remains influential for the development of former ancient capital cities and for planning at a smaller scale.

Mountain and water culture and urban planning

The Chinese mountain and water culture has a long history and is an important part of Chinese culture. It has had a wide influence on literature, art and urban construction, as reflected for example in poems, paintings, music, garden design, *feng shui* and site selection. The mountain and water culture stemmed from the traditional cultural ideology of *I-Ching (yi)*, which emerged during the Zhou Dynasty (1122 BC - 256 BC). Influenced by *I-Ching*, Chinese culture had a general tendency of longing for the internal rule of nature. After the Han Dynasty, the ideology of 'nature and men in harmony' became the centre of Chinese culture. Mountain and water are regarded as the main forms of nature, and therefore should be respected. This was reflected in urban planning. For example, the success of many ancient Chinese cities was based on their suitable natural mountain and water conditions, which was believed to result in a prosperous culture (Wang, 2002).

The human dimension and artistic mood created by the mountain and water culture were the soul of ancient urban planning in China. The purpose was to integrate a city into its natural environment, from which human beings derive their inspiration. The water culture has had a greater influence on ancient urban planning than the mountain culture. Water often played a central role in planning, for example in the plan of old Beijing city and the design of the Summer Palace (*ibid.*).

The early water culture was related to water conservation practice in Chinese history. Later on, literature, art and philosophy related with water added a cultural dimension and created characteristic forms of water culture. Water was a symbol of natural wisdom and human virtue. It also represented heavens and universe. The water aspect was also related to urban transport. Many ancient cities were located along large rivers and lakes, as in Hangzhou and Nangjing, for example. Other cities had large water bodies in their centre, as in Beijing and Jinan. There were also those that had networks of rivers and canals throughout the city, as in Suzhou. 'Regulating water' was an important principle and technique in both ancient urban planning and in classic Chinese garden design. It did not refer only to regulating water resources in water conservation projects, but also to the cultural dimensions of water. These were reflected in the relationship between cities/architectures and water bodies. Along water bodies, there were often sites of important cultural buildings and other cultural elements of a city. The changing scenery of water could evoke either a sublime worship of nature or a poetic atmosphere. Cities situated along coasts often developed a

special ocean culture with activities including viewing the natural scenery of the ocean and gathering seafood on the beach when the tide was low (*ibid.*).

In ancient urban planning practice, mountains were used not only for their functional and technical aspects (e.g. defence), but also for their aesthetic and symbolic values. A hill located in the centre of a city could be related to its symbolic representation of a benevolent government. In some cases, this provided the basis for selecting the location of an imperial city. The tradition of mountain worship also had influence on a special urban arrangement with a 'mountain-city' urban axis and related recreational sightseeing routes. It also resulted in the important role of the 'nature and men in harmony' principle in ancient urban planning. The important role of mountain landscape and its symbolic values in ancient urban planning added a cultural dimension to urban planning activity. For example, an important task of urban planning was dealing with the relationship between mountains and city and bringing sub-urban mountain scenic views into a city so that the beautiful mountains scenery could be appreciated in the city. In cities where mountains were located both inside the city and in the surroundings, the physical and visual relation and connection between city and mountains were especially important considerations in urban planning. Mountains often acted as the main reference for the creation of the urban axis (*ibid.*).

Mountain and water culture in contemporary urban planning

These connections between mountain and water culture and ancient urban planning can still be recognized in the contemporary Chinese urban planning approach. At a macro scale, the 'Mountain and Water City' is the Chinese model of a pleasant urban living environment. It is no surprise that for many Chinese, even for the professional planners and landscape architects, 'Garden City' is naturally related to a 'Mountain and Water City' (Jia, 2000; Li, 1999; Luan & Liu, 2004). Large-scale water bodies are often looked upon as a treasure of a city, not only because of the practical functions but also because of cultural and aesthetical meaning. Urban planning and construction of the surroundings often refers to the situation of water bodies. Zones along the water are often cultural or business centres. Mountains, including those on islands, are often used as important references for the main urban axis and for visual scenery connections with urban landmarks. Developing a series of good visual axes (*dui jing)* is one of the key principles for landscape scenery planning in contemporary Chinese urban planning practice. At a micro scale, the mountain and water culture still influences landscape design of the outdoor living environment and of contemporary parks. This is related to the Chinese 'mountain and water garden' tradition.

THE CLASSIC CHINESE GARDEN AND ITS INFLUENCE ON URBAN GREEN SPACE

Historical development

The classic Chinese gardens originated from very ancient times. Dating back to the Shang Dynasty (circa. 16th-11th Century BCE), enclosures in natural settings, known as '*you*', were developed for emperors. Wild animals were raised here for hunting and high platforms were developed for communicating with the Spirits. Later, emperors and monarchs during different periods constructed palaces combined with gardens. The imperial gardens included hills and ponds, bridges and pavilions, as well as precious animals and woods, by which the emperors strove to manifest the beauty of the heavens, the earth and the universe. Private gardens started to develop during the Wei-Jin and South-North Dynasties (220-586 CE). Among the four types of Chinese gardens (imperial garden, private garden, temple garden and open-style scenic areas), the private gardens have exerted a major influence on Chinese garden tradition, even on the imperial gardens of the Ming and Qing Dynasties (Lou, 2003; Wang, 2002). Therefore, my introduction to classic Chinese garden will mainly focus on this type.

The emergence of private gardens was related to the emerging philosophy of seeking peace and doing nothing against nature. During the Wei-Jin and South-North Dynasties (220-586 CE), socio-political contradictions were very sharp. The officials of that time combined the Buddhist and the Taoist escapist attitude, and chose a lifestyle of distancing themselves from political troubles and of cultivating their personalities. In addition to enjoying walking in natural scenic locations, they also imitated the scenery of forests and hills on the grounds of their own residences. Other artistic forms including poetry and literature, calligraphy, painting, and music also emerged and developed after the same philosophy. The style of the classic Chinese garden, blending natural scenery with poetry, calligraphy and painting began in this period (Lou, 2003; Wang, 2002).

This art of garden design developed further during the Tang Dynasty (618-907 CE) and reached a climax during the Song Dynasty (960-1279 CE). Many writers and poets developed their own garden residences, where they could drink, sing, converse about literature and poetry and enjoy themselves. They looked at nature as a friend and they felt in harmony with nature. The earlier gardens of this type were relative large and related to natural settings endowed with hills, forests and lakes. The style of the relatively small, man-made natural scenic garden also developed. It concentrated hills, ponds, streams and lush vegetation into one small area, creating ever-changing artistic effects (Lou, 2003; Wang, 2002).

During the Ming Dynasty (1368-1644 CE) and Qing Dynasty (1644-1911), building techniques were more mature and private gardens were well developed. The practice of garden residence construction flourished

especially in the Qing Dynasty, and even became a folk practice. Most of the existing private gardens in China are from this period. These private gardens were mainly situated in ancient cities south of the Yangtze River, for example Suzhou and Yangzhou. These gardens had more variety in design and became smaller in size. They had an intricacy and precision of design, deliberate use of stones and woods, and close relations between design and cultural meanings. These gardens attracted the emperors' attention and influenced the imperial gardens in Beijing developed during these periods, such as those at the Summer Palace (Lou, 2003; Wang, 2002).

Main characteristics

The classic Chinese garden is often referred to as 'mountain and water garden', as artificial hills and ponds were often major structures of a garden, together with garden buildings and vegetation. The practice of establishing artificial hills and ponds was related to the 'mountain and water culture' of China, as described above. Imitating natural mountains and waters was an important craft in classic Chinese garden construction. It often demanded extensive earthwork. Hills were built with earth, stone or both, and ponds were dug by men. The earth from digging garden ponds could be used for building garden hills. Many principles guided the detailing of shapes and compositions of the hills and waters in a garden. In general, these were to accomplish an artistic mood of 'coming from nature although being created by men', as well as 'coming from nature, but surpassing nature' (Lou, 2003; Wang, 2002).

Garden owners' actions of digging lakes and making hills and 'rocks' reflected not only their fondness of the natural environment but also their pursuit of virtues and wisdom. This was related with another character of the classic Chinese garden: being rich in symbolism. Confucius said that wise people take pleasure in water, and kind people find happiness in mountain areas (cited in Lou, 2003, p.126). Mountain and water were thus related with people's personalities. Stones, plants, buildings and even the garden as a whole were all endowed with symbolic meanings. Plants have essential symbolic roles. For example, pine trees represent wisdom, bamboo symbolises strength and upright morality, while lotus stands for purity. In the classic Chinese garden, a single stone or a single tree could create scenery because it symbolized a deeper meaning and evoked infinite imagination (Lou, 2003; Wang, 2002).

The classic Chinese garden was created in pursuit of a poetic mood and a spiritual utopia evoked by a figure or scenery. It was both a way of artistic expression and a mode of aesthetic conception, which was shared by many Chinese art forms, for example the mountain and water painting. To create scenery in a garden, it was not important to copy nature, but rather to express the spirit of nature and to inspire contemplation of one's inner heart and life

philosophy. Therefore the classic Chinese garden is also called the ‘Chinese scholar’s garden’. The symbolism and meaning-given feature of the classic Chinese garden mentioned above was a part of this approach. Since everything could symbolize and deliver meaning, it was not necessary to use much of material or a large space to create beauty. A few stones and a small pond could evoke the image of natural mountains and the ocean. A group of trees could evoke the image of a forest. Poetic mood and spiritual utopia were often stimulated by inscriptions of site names, poems and verses in a garden. They could be inscription of a scenic spot name in a stone or couplets hung on the columns of hall. These were not only decorations, but also expressed emotions of garden builders and attached a poetic atmosphere to the surrounding space (Lou, 2003; Wang, 2002).

It was a common practice in classic Chinese gardens to introduce scenic wonders and historical sites into gardens. Some famous scenic wonders and historical sites, for example the ‘Five Famous Mountains’ of China and ‘The Moon Reflected in Three Lakes’ scenic spot of Hangzhou, were to be found in different gardens, although in a symbolized and minimized form. With the introductions of these famous sceneries into the garden, their cultural and historical implications were also introduced. They not only created scenic views in the garden, but also enriched the cultural dimension of the garden. Sometimes a scenic spot far away could be ‘borrowed’ for use in a garden by creating a view connection. In this way, the infinite beauty of nature could be appreciated, even when sitting within a small man-made garden (Lou, 2003; Wang, 2002).

Influence on contemporary urban park construction

The classic Chinese garden tradition still plays an important role in contemporary urban park construction. During the 1950s, the practice of urban park development in China was mainly influenced by the earlier Soviet Union’s urban ‘cultural-recreational park’ theory. This theory focused on functional zones to serve as places of gathering for the local public, as well as for political and cultural-recreational activities. However, since the 1960s and especially after the 1970s, Chinese park design theory started to explore an approach of further developing the characteristics of the classic Chinese garden tradition. This approach emphasized that the main form of public park art is a harmonious integration between creation of ‘mountain and water’, planting design and architecture. When developing most of the new parks, the form of ‘mountain and water garden’ was applied; mountain and water are the main structures of park scenery. Buildings and other man-made structures in parks were often developed in a classic style. The tradition of seeking a poetic mood and philosophical meanings in the classic Chinese garden has also been applied in contemporary park construction. In most parks, the names of scenic spots and spaces are based on design

concepts and visual effects. Main buildings in parks often have inscriptions in the form of poems and verses (Li, 2002).

4.3 Urban planning and urban greening discourses in China

This section starts with an overview of the discourses on urban planning and urban greening in China since 1949. Subsequently, there is an introduction to the current discourses on urban planning and construction, which are characterized by a strong emphasis on urban environment and protection of undeveloped land. This leads to an introduction of the discourse and approach of urban green system planning, which is a developing topic within the field of urban planning and construction in China.

EVOLUTION OF PLANNING AND URBAN GREENING DISCOURSES IN CHINA

From the foundation of P.R. China, the urban greening discourse can be roughly divided into four phases following historical and political developments. A distinction can be made between:

- The early stage (1949-1957): establishment of planning organisations and first Master Plans. Emphasis on green space protection and improving green space quantity.
- The politically unstable periods of the 'Great Leap Forward' and the 'Cultural Revolution' (1958-1977). Planning came into disrepute and green spaces were considered as bourgeoisie luxury. In this period, historical gardens were destroyed.
- The period of economic recovery (1978-1989), with re-establishment of planning, standards for green space provision, new laws for urban planning and environmental protection, and first urban greening strategies.
- The period of strong economic development and urban growth (since 1989), which brought about new legislation for urban green system planning, designation of 'National Garden Cities', and a new emphasis on ecology.

1. Early stage (1949-1957)

In the early years after foundation of the P.R. China, the national economy was in a recovery stage. The tasks of urban construction were to develop urban infrastructure and improve living conditions. The central government started to establish urban administrative organizations and to issue regulations for urban planning and construction. The Ministry for Architecture and Engineering was founded in 1952. It included a Bureau for Urban Development (Halik, 2003). Urban planning was greatly influenced by the functionalist approach of the former Soviet Union, where the national

government provided detailed planning norms, and urban planning was based on and served in the implementation of the national economic plan (and regional plan). Many cities developed their first Master Plan in this period. Urban planning played a role in choosing sites for key national industrial projects, coordinating the new industrial areas and existing cities and infrastructures. In 1956, the Ministry of Construction issued the first legislative document for urban planning 'Temporary Measures for Urban Planning' (Tongji University, 2003; Zou, 2002).

During this period, the task of urban greening was mainly to protect and maintain existing urban green spaces (Zhang, 2006). Some private gardens were transformed and opened to the public. Increasingly, the quantity of urban green was more important than improving the quality of urban green. There was massive greening of streets, squares and residential areas (Halik, 2003).

2. Unstable stage (1958-1977)

In 1958, the Chinese Government started the 'Great Leap Forward' movement in order to promote industrialization and economic development. Urban plans for large scale urban development were approved. However, these plans far exceeded any realistic scale. Urban development and urban planning were in chaos (Tongji University, 2003; Zou, 2002).

There also was some movement for urban greening. The central government created the slogan "to gardenize the entire country *(da di yuan lin hua)*" as the national greening policy, which included afforestation and urban greening (Halik, 2003). In 1958, the first national urban greening conference was held in Beijing. It focused on the development of nurseries and mobilising the masses, in particular for massive tree planting. In 1959, the second national urban greening conference was convened. It recommended that urban greening and the city development plan should be in agreement with one another. Other concepts were 'point green, line green and area green' and urban greening through combining the productive use of green spaces and aesthetics. These concepts were implemented in the Master Plan of Beijing in 1958, wherein urban zones were separated by green buffer zones in order to control urban development. The green buffer zones contained parks and urban green spaces, orchards, nurseries, parts of farmland and other vegetated areas (Zhang, 2006). The urban greening practice at that time included massive tree planting, but lack of management afterwards (Halik, 2003).

In the early 1960s, China experienced difficult times (e.g. famines) due to natural catastrophes and political isolation from the Soviet Union. In 1961, a policy of "no urban planning for three years" was launched. Many urban planning organizations were dissolved (Tongji University, 2003; Zou, 2002). Urban greening was seen as 'non-productive' and was put on hold. Parks

needed to be self-sufficient, according to the above mentioned principle of 'combining productivity with beautification'. The function of urban green areas was mainly focused on producing food and fuel wood, instead of offering settings for recreation. In 1963, the Ministry of Agriculture and Engineering issued the first national guidelines for urban greening (Halik, 2003). However, these guidelines had a limited legal status. They described some organisational and management issues, objectives and tasks, as well as a typology of green space.

The 'Cultural Revolution' (1966-1976) caused massive political and social upheavals in the whole country. Urban planning and urban development were seriously damaged. National organizations in charge of urban planning were dissolved, as were organizations at lower levels. Urban development and construction documents were destroyed in many cities (Tongji University, 2003; Zou, 2002). At the same time, urban greening was criticised in the battle against feudalism and capitalism. As a principle, it was required that every bit of land had to be used optimally. Posters appeared across the country stating "green and beauty morally spoil people" and "a park is a paradise for the bourgeoisie". Many (historical) parks and gardens were damaged or even destroyed. The Cultural Revolution also affected the organizations for urban greening. The Ministry of Construction was dissolved in 1970, as were the city greening offices. University departments were temporarily closed. Beijing Forest University, which was the first higher education institution with a landscape architecture curriculum, had to move from Beijing because of the unrest (it came back during the 1980s). Some planting was still carried out, however it was mostly in more rural areas and smaller towns (Halik, 2003).

3. Rapid recovery stage (1977-1989)

After the Cultural Revolution, urban construction and urban planning of China started a new era. In 1978, the political change and the policy of 'opening up' brought China into the world market. The third National City Development Conference was held in the same year. It emphasised the important role of the city in the national economic development. It also stressed the importance of urban planning and encouraged cities of the whole nation to develop city plans (Tongji University, 2003; Zou, 2002). During the conference, urban greening was again put on the agenda. It was suggested that cities should take this task seriously. Moreover, citizens should take an active part in greening. The conference also stated that management and maintenance were to be improved, and that the areas lost should be reclaimed and restored. The conference suggested norms, such as the provision of 4 m^2 of public green per capita by 1985, and 6-10 m^2 per capita by the end of 2000. It was recommended that newer city districts should have 30% green space by 1985, and 35% by 2000, while the

respective percentages were 25% and 30% for older city districts (Halik, 2003).

In 1979, the National Office for Urban Development was reinstated as a ministry. Legislation and guidelines were increasingly promulgated to provide a legislative basis for the rapid urbanisation and industrial development, e.g. 'Environmental Protection Law' of 1979 (Halik, 2003). In 1980, the Ministry of Construction issued two sectoral regulations: 'Temporary Measures for Preparation, Evaluation and Approval of Urban Plan' and 'Temporary Regulations for the Norms of Urban Planning'. Urban planning at that time was no longer seen as preparing the 'blue-print' of a city, but instead as an urban development strategy (Tongji University, 2003). During the 5th National People's Congress (4th session) in 1981, a decision was made that every Chinese aged between 11-60 years would either have to plant 3-5 trees, or to accomplish other greening tasks with the same workload. Since then, national actions have taken place every year around National Tree-planting Day (March 12th). In 1982, the National Greening Commission, chaired by a representative of the prime minister, was set up to coordinate greening actions. Representatives belonged to various ministries, organisations and also the army. The Commission still exists, although in a reduced form since 1998 (Halik, 2003).

In 1984, the State Council issued 'Regulations for Urban Planning'. These regulations broke out of the box of seeing urban planning as "the continuation and detailing of the national economic plan". It clarified that the tasks of urban planning are not only the means of organizing land and space, but also the comprehensive management of urban economy, and cultural and public enterprises. It also defined the planning management system and emphasised the importance of planning management (Tongji University, 2003). In 1986, the first national event on urban parks was held in Beijing, where there was criticism, for instance, of the required link between production and aesthetics (Halik, 2003).

The 'City Planning Act' was enacted in 1989 and took effect in April 1990. Within this act, the regulations of 'urban planning area' and 'one note and two permits' have played an important role in urban development ever since (Tongji University, 2003) (see Section 4.4). In the City Planning Act (1989), three paragraphs dealt with urban green space. It was suggested that the City Development Plan must be accompanied by Green Development Plan. This provided a legal basis for urban greening (Halik, 2003).

4. Stable development (1990s- present)

During the 1990s, Chinese cities became increasingly influenced by the trend of globalization. To reasonably manage urban resources, to increase urban competitiveness and to become an 'international city' become obvious goals of many cities. In the early 1990s, the whole country experienced

'over-development' of the economy and urban construction, for example in the form of upsurges in real estate development and 'open up zones' development. Urban development became uncontrolled. The rapid industrialisation and development caused damage to many green areas, especially in cities. This resulted in the loss of a large amount of urban green space. With further urban and industrial development, environmental consequences became obvious. Urban citizens became more aware of environmental issues and the importance of urban green space. Among city planners and decision-makers, the increasing encroachment into green areas by urban development increased awareness of the need for a better legislative basis, as well as the need for integration of green structure with e.g., infrastructure planning (Halik, 2003; Tongji University, 2003).

In 1992, the State Council issued 'Regulations for Urban Greening', which have provided a legislative basis for urban greening ever since. Cities' statutory departments for urban greening (often the City Park Administrations) were given greater powers to control the green area. Since 1992, 'National Garden City' and 'National Garden District / *dan wei* (urban work unit)' honorifics were introduced to award cities for their efforts in urban greening. Since the beginning of the 1990s, cities have been required by law to implement the planning concept of the urban green system. Moreover, environmental protection has become a political priority since the 1992 Rio Conference. However, in practice, problems have arisen from giving too much attention to aesthetics, and too little to social, environmental and economic issues in green space planning and management (Halik, 2003).

Two parallel processes characterised urban development in China during the 1990s: urban renewal/restoration and urban expansion. Both used the concept of 'open up zones' mentioned above. This led to the loss of a large amount of urban green space (Halik, 2003). In 1996, the State Council issued the 'State Council's circulation on enforcing the task of urban planning', which emphasised that the task of urban planning is to comprehensively organize various land and space resources, arrange various constructions, and realize a sustainable urban development of both economy and society (Tongji University, 2003; Zou, 2003). Many cities have developed or revised their Master Plans. Some large and medium-sized cities also developed District Plans and Regulatory Plans.

CURRENT DISCOURSES AND POLICIES ON URBAN PLANNING AND GREENING

At the turn of the 21st century, China reinforced its development strategy, promoting the speed of urbanization as an approach to economic development. The urbanization process requires development of a reasonable urban system in a harmonized manner, combining the development of large, medium and small cities and small towns. For promoting economic and social development in rural areas, development of small towns was

emphasised as an important strategy within the Chinese urbanization process. However, the urbanization process needs to maintain its principle of an integrative development of both economic/social aspects and the ecological environment. The government stressed the principle of sustainable development, wherein birth control and protection of environment and resources are listed as basic/key national strategies (Tongji University, 2003).

The policy of protection of resources and environment was an important part of the 10th Five Year Plan for the national economy and social development (2000-2005). In the 'plan outline', two chapters dealt with these topics. In the chapter 'Save and protect resources and achieve a sustainable utilization', sustainable use of water resources and protection of land, forest, grasslands and oceans resources were emphasised. In the chapter 'Strengthen ecological construction and protect and harness the environment', the issue of improving environmental quality especially in large and medium-sized cities was mentioned. Another important national policy is to strengthen land management and protect farmland; land use for urban construction should be strictly controlled (Tongji University, 2003).

To achieve the goal of a balanced urban and rural development of economic, social and environmental aspects, the role of urban planning became extremely important. In the new era, the task of urban planning was broadened to include both urban and rural areas. In 1999, the Ministry of Construction organised a national conference on urban and countryside planning. Ten issues were identified for urban and countryside planning: comprehensive planning, using land and water resources in a reasonable and economic way, protecting and improving the urban ecological environment, tackling the relationship between urban construction and regional development, promoting industrial structure adjustment and urban function enhancement, guiding construction and development of small towns and villages, preserving historic and cultural heritage, protecting scenic areas, creating a characteristic city image and developing urban and countryside planning into a legal system (Tongji University, 2003).

After the conference, the State Council and Ministry of Construction issued a series of policy documents to emphasise the tasks of City and Countryside Planning, as well as the management, legal process and organization during the planning and implementation process (*State Council' s circular*, 2002; Tongji University, 2003). The Ministry of Construction issued 'Temporary Regulation for Mandatory Contents of Urban Planning' (2002). The 'Mandatory Contents' referred to the issues of urban system planning, comprehensive urban planning and detailed planning, which are related to a balanced regional development, resource utilization, environmental protection, scenic resource management, natural and cultural resource protection, public benefits and public safety.

It becomes obvious that nature and green spaces in and around cities, and their ecological aspects in particular, have gained increasing attention in the urban planning and urban development discourse. This has had a strong impact on the rapid development of urban green (space) system planning in recent years. Since the late 1990s, an increasing number of laws and regulations with special focus on urban greening have been released (see Section 4.4). Urban green system planning has become, to an increasing extent, a more independent type of sectoral planning. The following paragraphs introduce the topic of urban green system planning.

URBAN GREEN (SPACE) SYSTEM PLANNING

Background to urban green system planning in China

As mentioned earlier, modern city planning in China was influenced by Soviet city planning from the 1950s. The planning and management of urban green areas has also followed the Soviet tradition, which used a concept called 'urban green system planning'.

Starting from the 1950s, urban green system planning in China was a part of the Master Plan of a city. It mainly focused on planning for public recreation in the city. It originated from the experiences of developing cultural-leisure urban parks in the former Soviet Union. In practice, it adopted the following planning principles (Li, 1999):

- The layout of urban green areas should be based on the 'points, lines and patches' concept.
- Urban green spaces are managed by different levels of authorities based on their size and location and are established in stages according to the schedule of the plan.
- Urban green system planning and greening practice should try to fulfill the norms of the national code for urban planning.

Since the late 1980s, independent urban green system plans have evolved in the Chinese planning system. Some scholars have observed that the urban green system planning during this period leaned towards the American model of green space planning, with an emphasis on 'visual effects'*(jing guan xiao guo)* that is a component of the American movement for landscape resources evaluation and planning for protection (Li, 1999). However, as Jia (2000) argues, these western planning theories, which were brought to China after the Cultural Revolution, have not had a great influence on Chinese urban green system planning, although they inspired and promoted urban greening in China.

More influential was a concept for planning of urban green space brought forward by the famous Chinese scientist Xuesen Qian in the 1990s. He

suggested developing the Chinese city as a ‘Mountain and Water City’ based on the Chinese ‘Mountain and Water Poem’, the “Mountain and Water Painting” and Chinese traditional garden buildings, all of which were described in the previous section. This concept gained considerable attention in the fields of urban planning, architecture and landscape architecture (Jia, 2000; Li, 1999). During the same period, the Ministry of Construction started nominating ‘National Garden Cities’, which has greatly promoted urban green system planning and the urban greening process in China (Jia, 2000).

Since the late 1990s, large and medium-sized Chinese cities have prepared urban green system plans. At the national policy level, there has been an increasing promulgation of policies, regulations and guidelines related to urban green system planning over the same time period (see Annex 5). For example, in 2001 the ‘State Council’s circular on strengthening the development of urban greening’ was published, which triggered the second wave of urban green system planning after inception of the ‘National Garden City’ competition. In 2002, the Ministry of Construction published the ‘Guidelines for Urban Green System Planning (trial edition)’ (see Annex 4). This guideline marked the move from an unregulated approach to green system planning to a systematic and standardized practice. Since then, urban green system planning in China has developed into an established planning theory and system, which incorporates influence from the Soviet urban green system planning tradition, inspiration from Western urban greening ideas and the Chinese garden tradition, as well as a reflection on recent urban greening practice (Jia, 2000; Jia, 2004).

Recent discourses on urban green system planning

Chinese research on urban green systems developed from the 1980s, and especially since the 1990s. Main research topics have included: classification of standards for urban green space, approaches and experiences of urban green space (system) development in China and abroad, benefits of urban green space, and of ecological aspects in particular, relevant concepts for urban green system planning; interactions among various disciplines, and organization and policy of urban green system planning (Jiang, 2006). Since the late 1990s, there has been a growing number of research projects and publications that discuss the contents, structure and forms, and enforcement system of urban green system planning in China (Jia, 2000; Jiang, 2006; Li, 1999; Li, 2002; Zhang, 2006). Research often used examples of completed urban green system plans for Chinese cities to illustrate how theory was applied in plan preparation practice. Other research focused on specific aspects of the urban green system, for example ecological functions or

providing local identity, and how these are dealt with in real cases of preparation of green system plans.

A considerable amount of recent research has been based on landscape ecological theory. Concepts of landscape ecology have also been adopted in practical urban green system plan preparation (e.g. Li, 1999; Wang & Xu, 2003). Landscape ecology indices and remote sensing and computer techniques have been used to analyze the spatial pattern and ecological quality of existing urban green spaces, as well as to suggest approaches for ecological planning based on analysis and evaluation of various factors and indictors (e.g. Che, 2003; Li, et al., 2004; Zhang & Wang, 2006). Ecological theories have been applied in the analysis, application and construction of urban green systems and in assessment of the ecological benefits of urban green systems (Jiang, 2006; Liu & Zhang, 2005). For example, based on their research, Wang and Li (2001a,b) suggested an optimum size and configuration of urban green corridors and a 'green heart', for improving the ventilation and the climate of urban areas. The results from this research have been applied in the development of urban green system plans for certain cities (Yang, et al., 2003).

Other principles that have been taken into consideration in urban green system planning include taking advantage of local natural and cultural resources to strengthen local identity, controlling urban sprawl, providing optimum opportunities for recreation and leisure, promoting city image and identity, combining green systems with the construction of a soft traffic system, and promoting the production of plants and flowers (Gu, et al., 2005; Shu & Zhang, 2006). Jiang (2006) explored an approach for integrating three aspects of urban green system planning: the landscape aspect, the ecological aspect and the economic aspect, wherein multiple functions of urban green space are considered.

The issue of protecting and planning the surrounding green space of a city has been increasingly stressed as an important topic in urban green system planning (Xu, 2005; Zhang, 2006; Zhao, 2007). This type of green space often comprises natural and cultural landscape resources in suburban areas ('other green spaces' in the Classification of urban green space, see Annex 5, Table A5.2), which have important ecological values for the city. The regional scope has been clarified in the national guideline for urban green system planning (*Ministry of Construction*, 2002). However, the current planning system and technical conditions do not fully support realisation of a regional green system plan in practice (Xu, 2005). Therefore the real sense of a regional urban green system planning approach needs to be further explored and discussed. A geographical scope, as well as planning procedure that is more in line with urban planning has been suggested for urban green system planning (Xu, 2005; Zhang, 2006).

The discussions on the necessity of integrating urban green system planning and urban planning increased, especially after the year 2000, first at an academic level, and then also in practice. There have been trial run practices in the revision of the Master Plan of Beijing, where the urban green system planning process was carried out concurrently with the overall urban planning process (Xu, et al., 2007). Based on plan preparation practice, Xu et al. (2007) explored potentials of promoting the role of urban green system planning through integrating urban green system planning with urban planning. She suggested that urban green system planning should "break the border" of the central city and use the planning area as the subject area. She also suggested that urban green system planning should apply a broad definition of urban green space and that urban green system planning should emphasise the concept of urban green space as urban infrastructure.

The issue of public participation has also been discussed and encouraged in recent literature. Publications have introduced international experiences and concepts of public participation, experiences with public/social surveys in planning practice, and suggestions for potential forms of public participation in China (e.g. Guo, 2004; Guo, et al., 2007; Lei, 2003). There have been very few studies of urban green system planning from the perspectives of organizations, actors, planning process and implementation.

Based on an overview of recent literature on urban green system planning in China, Liu and Zhang (2005) identified a limited number of focal points:

1. System view. Chinese urban greening has gradually started looking at urban green space as one large system.
2. Ecological view. A growing number of studies has applied ecological theory into exploration of the structure, norms and benefits of urban green systems.
3. Integrative view. Seeing green system as a sub-system of the urban system; an increasing amount of research tries to explore how to integrate the urban green system into the urban plan and how to direct urban development.
4. Technical view. Computer and remote sensing techniques have become necessary means in large and medium-size cities for analyzing existing urban green spaces and for preparing a scientifically-based green system plan.
5. Goal-oriented view. To construct a 'garden city' is a usual goal for urban greening in China and therefore a topic of urban green system planning research.

Liu and Zhang also discovered that the field of urban green system planning is becoming more multi-disciplinary. It has a "1+4" disciplinary structure, with landscape architecture / landscape planning as the main discipline, and

the fields of planning, greening, environmental sciences and forestry as extensions (Liu & Zhang, 2005). Geology is also involved (Jiang, 2006).

Jiang (2006) summarized three trends in urban green system planning practice and research in China:

1. Growing emphasis on ecological aspects — from a sectoral plan of the urban plan to more independent planning of an ecological urban green system.
2. Combining qualitative and quantitative methods, emphasizing quantitative analysis and evaluation.
3. Emphasizing practical effects, giving more attention to the balance between multiple benefits, while at the same time having as the ultimate goal a suitable city for living in and a sustainable urban environment.

Moreover, related to the development of a regional approach to urban planning, there is also tendency to broadening the scale of urban green system planning from a city's built-up area to a regional city perspective (Jia, 2004; Xu, 2005; Xu, et al., 2007; Zhang, 2006).

Current approach for urban green system planning

A current understanding of the contents of urban green system planning suggests that it deals with all the urban green space in the city region (Jia, 2004; *Standard for Classification*, 2002). It uses a broad definition of 'urban green space', which includes not only green areas within land used for urban construction, but also green areas beyond this ('other green space' in the Classification, see Annex 5, Table A5.2). The latter type mainly refers to green areas in suburban areas with positive ecological, landscape and recreational functions for the city, including mountains, water system and wetland (Jia, 2004; *Standard for Classification*, 2002). 'Urban green system' is "the sum of various green spaces within urban areas; it is based on the ecological function of urban green space. At the same time it has multiple functions, such as landscape and recreational functions, as well as providing services for other urban systems; it is a sub-system of the urban ecosystem, characterized by an artificial nature system with different levels; it is an open artificial natural environment" (Jiang, 2006, p. 10). According to some scholars, the 'city region' and 'urban areas' in the above definitions are better defined as city planning area (Xu, 2005; Xu, et al., 2007; Zhang, 2006).

'Urban green system planning' is "guided by theories of urban planning and ecology, striving for a logical layout of various green spaces within the urban area, defining reasonable green space norms, and coordinating the relationship between human habitats and green spaces, between development and green space construction, among organisms, non-organisms and bio-

communities. It is an important part of urban planning and urban ecological planning" (Jiang, 2006, p.10).

Urban green system planning constitutes sectoral planning within urban planning at large. It deals with in-depth and detailed issues of urban planning. The Urban Green System Plan is supposed to be drawn up through collaboration between the statutory department for urban planning and the statutory department for urban parks. The Urban Green System Plan is to be included into the Master Plan. The main tasks of urban green system planning are, based on thorough investigation and research and according to the city's features, development goals, land use layout as stated in the Master Plan, to scientifically define norms for the development of various urban green spaces and to logically arrange the construction of various urban parks and green spaces and the spatial layout of green space for the larger regional environment (*Ministry of Construction*, 2002).

The goals of urban green system planning have two dimensions. One is a professional dimension to improve the ecological environment of the city, to optimize urban human settlements and to promote sustainable development. The second comprises a practical dimension to support the development of the Master Plan and to construct a 'National Garden City' (*Ministry of Construction*, 2002; Jia, 2004; Jiang, 2006).

From an academic perspective, the following principles are suggested for preparing a Green System Plan (Jia, 2000, p.15). In addition, the basic principles of urban ecosystems and urban ecological planning have become recognized as important for urban green system planning (Jiang, 2006):

- Take advantage of the natural conditions, represent the history and culture of the city, combine the green system with the layout of Master Plan, consider different types of green space as a whole, and create a characteristic Urban Green System Plan.
- The process should be based on national norms and regulations, as well as on recreation demands, greening processes, efforts to improve the ecological environment, the demand for preventing catastrophes, while considering the status of city development and the economic situation, defining reasonable types (according to the Classification of urban green space) and size of different green spaces.
- Plan a balanced layout for different types of public parks for recreational demands. Linear green space connects into a network. Public parks, ecological green space and green networks connect into a green system.
- Develop reasonable short-term and long-term plans. Consider the growth of city construction and population and make plans in several stages. Try to ensure that the increase of urban green space is not slower than city development.

- Mainly use native plants. Define a reasonable ratio among trees, shrubs, flowers and grass. Mainly use trees and shrubs. Consider the visual, ecological and economic values of the plants.
- Ecological protection green space can exceed norms when necessary.

Related to the national planning system, the development of an urban green system plan is based on national/provincial laws, regulations and norms, professional regulations and norms (see also Section 4.4), already approved local plans and the locally existing situation (Jia, 2000).

4.4 Statutory planning system for urban greening in China

This section will first present an overview of the Chinese planning system with focus on its various stages and levels, approval system and implementation system, through which the relationship between urban green system planning and city planning is clarified. Subsequently, the legislation system for urban greening and urban green system planning is introduced. Finally, the section will give an overview of the main statutory organizations for urban greening and urban green system planning in China.

CHINESE PLANNING SYSTEM

Stages and levels

In China, the 'City Planning Act' (1989) used to be the national law for urban planning. In addition, there are national and local regulations for urban planning. This legislative system defines the tasks and contents of planning at various stages and levels, as well as the administrative organizations for developing and approving plans. According to the 'City Planning Act' (1989), the National Economy and Social Development Plan *(guomin jingji he shehui fazhang jihua)* and Urban Development Strategy provide important bases for urban planning. In addition, urban planning should comprehensively consider the local natural environment, and resource, historical and other existing conditions. The Chinese planning system consists of several stages and levels (see Table 4.1). Development of a city Master Plan often has two stages: Comprehensive Urban Planning and Detailed Planning. Each stage has several levels. The planning at an upper level guides planning at the lower level. Planning at a lower level comprises implementation measures of the planning at the upper level (*City Planning Act*, 1989; *Measures for City Planning*, 2005; Tongji University, 2003).

The new 'City and Countryside Planning Act' (2007) replaced the 'City Planning Act' (1989) at the beginning of 2008. It has kept many of the main principles of the 'City Planning Act' (1989), but further emphasizes planning's role in realising a spatial balance between city and countryside in

order to achieve sustainable development with harmonized development of city and countryside, as well as a balance of economic and social aspects. City and Countryside Planning includes all the levels defined by the former 'City Planning Act' (1989), including City and Town System Planning and City Planning. In addition, the new Act extends to the lower planning levels in the countryside, including County Town Planning and Village Planning (City and Countryside Planning Act, 2007). Since the new Act falls outside of the time frame of this PhD project, the introduction of the Chinese planning system is based on the 'City Planning Act' (1989).

Table 4.1. *Stages and levels of the Chinese planning system. (Continued on next page).*

Sources: *City Planning Act* (1989); *Measures for City Planning* (2005); *Standard for basic terminology of urban planning (GB/T50280-98)* (1998); Tongji University (2003).

Planning levels (and scale of the plans)		**Contents and Role**	**Organization responsible for developing the plan**
National land planning, Regional planning, River basin planning, Regional land use planning		Urban planning should coordinate with these types of planning.	Began late in China; started to develop the statutory organizations and process
Urban system planning for the country (1:2500000), Province (1:1000000-500000), Autonomous Region, or Municipality (directly under the Central Government) (1:500000-100000)		Evaluating city and town development conditions, preparing a development strategy, estimating population growth and urbanization, defining development direction and scale, coordinating development with industries, arranging infrastructure and social facilities; guiding urban planning	National level: State Council's National statutory administrative department for urban planning (Ministry of Construction); Lower regional levels: The People's Government of the Province, Autonomous Region, and Cities directly under National Government.
Comprehensive urban planning (Master Plan) (1:10000-25000 for large and medium-sized city; 1:5000 for small city)	Outline for master planning	Defining the main principles for comprehensive urban planning: goal for urban development, status in the region, structure and distribution of regional urban system, designated function and size of the city, general layout of the city, land use for development, planning border, main infrastructure and measures.	City's People's Government; City's statutory department for urban construction and urban planning (Construction Committee and City Planning Bureau) is responsible for concrete tasks.
	Regional urban system planning (1:50000-2000000)	Estimating the urbanization level, regional infrastructure network and ecology, history and culture protection and construction, urban system functions, level, spatial structure.	Same as above
	Comprehensive planning	Defining the designated function of the city, size and spatial structure, various land uses for construction, infrastructure, relationship between short-term and long term construction	Same as above

	Sectoral planning	Transportation planning; Municipal engineering planning (including several sectoral plans: Water supply, Sewage, Power supply, Communication, District heating and Gas supply); **Urban green system planning**; **Scenic area planning**; Environmental sanitation facility planning; Environmental protection planning; Flood control planning; Underground space utilization and civil air defense planning; Earthquake protection and disaster prevention planning (some cities); **Conservation planning of historic cities** (some cities).	Same as above (various sectoral plans are integrative parts of Comprehensive urban planning); However, when necessary, the People's Government can designate responsible statutory sectoral departments for independent Sectoral Plans. The bold items are some often seen as independent sectoral plans and they have specific national regulations and guidelines on which they are based.
	District planning (1:5000) (recommended for large and medium-sized cities)	Based on the Master Plan, further zoning and organizing of land use, population distribution, public facilities and urban infrastructure; Guide Detailed Planning	The People's Government of the city; Municipal statutory department for urban construction and urban planning is responsible for concrete tasks.
Detailed planning	Regulatory planning (1:1000-2000)	Based on the Master Plan or District Plan, defining borders of various land use, defining controlling norms for various constructions and controlling levels of infrastructure system.	Municipal statutory administrative department for urban planning (City Construction Bureau and City Planning Bureau).
	Site planning (1:500-2000)	For the areas already clarified in construction plan; designing spatial layout, landscape planning and design, roads, green space, engineering pipe and power lines, vertical design	Relevant organizations (can entrust external planning institutes with the planning tasks).

Evaluation and approval system

For the evaluation and approval of plans, the general principle is that the statutory organizations at lower levels develop detailed plans and then report to the statutory organizations at upper levels for approval (see Table 4.2). Before reporting, the People's Government should widely consult public opinion, and the plan proposal must be agreed to by the People's Congress or its Standing Committee at the same level (*Measures for City Planning*, 2005; Tongji University, 2003). The recent national policies and regulations for urban planning add expert evaluation and public consultation (through expert evaluation seminar, public hearing seminar or media) as an important procedure before presenting the plans for formal evaluation and approval (*Measures for City Planning*, 2005; *State Council's Circular*, 2002).

Table 4.2. *Graded system for evaluation and approval of the Master Plan of a city.*
Source: *City Planning Act* (1989).

Types of plan		**Approval organization**
National Urban System Plan		The Ministry of Construction reports to the State Council
Provincial Urban System Plan		The People's Government of the Province or Autonomic Region reports through the State Council
Master Plan	Cities directly under the Central Government	The People's Government of the city reports to the State Council
	Cities where provincial or autonomous regional government is located, cities with more than 1 million population and cities designated by the State Council	The People's Government of the province, autonomous region or city evaluates the plan and then reports to the State Council
	Other cities; Towns where county government is located	Report to the provincial or autonomy region's or responsible city's People's Government
	Other towns	Report to the county's People's Government
District Plan		To be evaluated by the city's statutory department for urban planning (the City Planning Bureau), and then approved by the People's Government of the city
Detailed Plan	For a city without District Plan	To be evaluated and approved by the People's Government of the city
	For a city with District Plan	To be evaluated and approved by the city's statutory department for urban planning, except for the important Detailed Plans that should be approved by the People's Government of the city
Independent Sectoral Plan		The city's statutory department takes care of coordination of the plans and then reports to the city's People's government for approval

Implementation system

In China, a city's statutory administrative department for urban planning (City Planning Bureau) is responsible for managing plan implementation, including approval of land use and construction projects, evaluation of a completed project and punishing those carrying out illegal constructions. Regulatory Planning is the main measure for development control. The areas that have not developed Regulatory Plans use national, local and professional regulations as a basis for development control. In addition to Regulation Planning and regulations, statutory urban planning departments can define detailed planning and design conditions based on specific development needs. The evaluation and approval process for urban construction uses a system called 'one note and two permits *(yi shu liang*

zheng)'—'Permission Notes for Location', 'Land Use Permit' and 'Building Permit'. The City Planning Bureau is responsible for issuing 'one note and two permits'. Through the process, the Bureau evaluates whether the location of a certain project is consistent with various plans, defines the border of the project, provides specific planning and design requirements, and evaluates the final design proposals (Tongji University, 2003).

Urban green system planning as a sectoral part of urban planning

Urban green system planning in China follows the overall planning framework. It focuses on planning the areas not yet built upon from mainly (but not only) ecological, recreational and landscape perspectives. Theoretically it covers all the planning levels. According to the 'Temporary Regulation for Mandatory Contents of Urban Planning' of 2002 (*Circular about issuing*, 2002), protection of ecologically sensitive areas is listed as one of the mandatory contents of provincial urban system planning and regional urban system planning. Suggestion of a detailed layout comprising various parks and urban green spaces is a mandatory content for comprehensive urban planning. Suggestions for a greening rate and public green space areas, then, are a mandatory content of detailed planning. According to Jia (2000, p. 10), urban green system planning consists of several levels according to the size and type of a city (see Table 4.3). The green system plan for so-called 'super large cities' covers all the levels. The green system planning for large cities does not necessarily include a district green plan or regulatory green plan, depending on its specific situation. The green system planning for middle-sized or small cities consists of an urban green system plan, a detailed green plan and a design for urban green space. The recent discourse on urban green system planning in China has added the regional scale on top of the other levels (*Ministry of Construction*, 2002).

However, the focus of current statutory urban green system planning and plan preparation practice in China is mainly at the city level. In the Master Plan of a city, there are separate chapters dealing with different topics of sectoral planning that are integrative parts of Comprehensive urban planning (Master Plan) (see Table 4.1). During the past twenty years, independent sectoral planning has been developed in the Chinese urban planning system. The most developed types of independent sectoral planning are 'urban green system planning', 'scenic area planning' and 'conservation planning of historic cities'. Specific national laws and planning guidelines have been developed for these topics. For example, the 'Regulations for Urban Greening' (1992) and 'Guidelines for Urban Green System Planning (trial edition)' (2002) provide a legislative basis and guidance for 'urban green system planning'. As mentioned earlier, although Urban Green System Planning has an independent planning output and planning process, it is seen as an extension of the Master Plan of a city.

Table 4.3. *The sub-categories/levels of urban green system planning.*
Sources: Jia (2000); Jia (2004); *Ministry of Construction* (2002).

Name	**Scope**	**Subject**	**Purpose**
Regional Green System Plan	City region / planning area	Regional ecosystem structure planning; protection of natural resources; coordinating the surrounding green space with urban green space to achieve complementarity in functions, variety in landscape and continuity in space	Control and direct the regional green space according to the demands of urban planning
Urban Green System Plan	City level	Planning principles, goals, types of green space, norms, layout, green plan for different types of green space, tree species plan, measures for implementation of the plan	Give suggestions for adjustment of the city general plan
District Green Plan	District level	Planning principles, goals, types, norms, layout of the green system in the district, connections between green areas in the district	Coordinate with related city district plan and offer suggestions for necessary adjustment
Regulatory Green Plan	An area with a certain land use function, such as residential area, industrial area, economic development area, scenic area and so on	Controlling requirement for the types of green spaces, norms, functions, locations, scale	Give suggestions for the adjustment of the city general plan
Detailed Green Plan	Same as Regulatory Green Plan	Layout of the green space in the whole area, land use types, norms, landscape elements, recreational structures, path system, planting design principle and site plan	
Design for Urban Green Space	A certain green space for which the boundaries have already been defined by the plan	Proposal for general design and construction design	

LEGISLATIVE SYSTEM FOR URBAN PLANNING, WITH FOCUS ON URBAN GREEN SYSTEM PLANNING

Vertically, the legislative system of urban planning has three levels:

1. Laws issued by the National People's Congress or its Standing Committee.

2. National administrative regulations and sectoral rules issued by the Ministry of Construction.
3. Local administrative regulations and sectoral rules issued by the local People's Congress or its Standing Committee, and by the local (province and city) government.

National laws, legislation, regulations, circulations, standards and norms (issued by People's Congress, State Council and Ministries) have the highest priority. Those issued by provinces, autonomous regions and cities with special government status come next. Finally come the regulations of cities and districts (Halik, 2003). Horizontally, at both national and local level, the laws and regulation system for urban planning includes the main laws / regulations and relevant laws / regulations (Tongji University, 2003). In addition to the laws and regulations for urban planning, the national and local statutory departments for urban planning can also develop professional and technical norms and standards to guide urban planning. The following paragraphs will introduce legislation and norms for urban green system planning at the national level. This also illustrates the legislative system of urban planning.

Laws and regulations

Since urban green system planning is sectoral planning as part of urban planning, legislation for urban planning is valid for urban green system planning. In addition, specific national regulations have been developed for urban green system planning. Table 4.4 shows the most relevant laws and regulations of urban green system planning at the national level.

At national level, the 'Regulations for Urban Greening' issued by the State Council in 1992 provide the main legislative basis for urban green system planning. This document is often referred to when other relevant national codes and standards are drawn up. Among many regulation items for urban greening, it clarified the importance of planning for urban greening and provided principles and norms for planning of urban greening (*Regulations for Urban*, 1992). The 'Guidelines for Urban Green System Planning', issued by Ministry of Construction in 2002, is a further detailed legal basis for developing urban green system plans. It defines the main tasks and provides the contents outline of a standard urban green system plan in China (*Ministry of Construction*, 2002).

National policy

Besides the laws and regulations, the State Council, Ministry of Construction and local governments can also develop specific policies issued in the form of a government circulation, decision or document. These policies often promote specific movements/developments that the government find important

to strengthen. They could have a strong influence on planning practice, as well as on urban development, at least for a certain period.

Table 4.4. *Current relevant national laws and regulations for urban green system planning.* Sources: *Policies and Regulations* (2007); Tongji University (2003).

Hierarchy	**Main Laws and Regulations**	**Relevant Laws and Regulations**	**Issued by**
Laws *(fa lv)*	City Planning Act (1989) (expires Dec. 31, 2008); City and Countryside Planning Act (2008).	Land Administration Law (2004); Environmental Impact Assessment Law (2002); Forest Law (1984) (revised in 1998); Water Law (2002); Environmental Protection Law (1989); Architecture Law (1998); Monument Protection Law (2002).	People's Congress of P. R. China
Administrative regulations *(xing zheng fa gui)*	Regulations for Urban Greening (1992).	Regulations for Scenic Area Protection (2006); Regulations for Urban Road Administrative (1996); Regulations for Environmental Protection of Construction Projects (1998); Regulations for Basic Agricultural Land Protection (1999).	State Council of P. R. China
Sectoral rules *(bu men gui zhang)*	Measures for Urban Planning (Plan-making) (2006); Measures for Urban Green Line Administration (2002). Guidelines for Urban Green System Planning (2002).	Measures for Urban Blue Line Administration (2005); Measures for Approving Planning for City and Town System (1994).	Ministry of Construction of P. R. China

One example of this kind of policy is the 'State Council's circular about strengthening the development of urban greening (*Guo fa* (2001) No. 20)' (*State Council's Circular*, 2001), issued in 2001. It comprises the most important national policy on urban greening. It pointed out the problems in urban greening practice since the 1990s and emphasized urban greening principles, such as ecological environment construction, sustainable development, public participation and trees as main materials for greening etc. It also defined quantitative goals: greening rate in built-up area reaches

30% by 2005, 35% by 2010, green cover percentage reaches 35% by 2005, and 40% by 2010, and public green space per capita in urban central zone reaches 4 square meters by 2005, and 6 square meters by 2010. This document also suggested concrete measures for promotion of urban greening, for example, emphasizing the role of 'urban green system planning', increasing greening budgets, encouraging research and design for urban greening and improving the legislation system for urban greening.

National norms

Since the 1990s, the Ministry of Construction has started to develop detailed professional norms and standards for planning and designing urban green space. The available (before February 2008) national and professional technical norms and standards are shown in Table 4.5. These norms and standards are both quantitative and qualitative. They relate to, for example, height and length/width of plantations, size of different types of green space, land use percentage in parks, size of green space in residential area according to the location of buildings, etc. There are also standards that define main terms and land type classification used in urban planning and urban greening (see Annex 5, Table A5.1, A5.2).

The most relevant national norms are the 'Regulations for Norms for Planning and Establishment of Urban Greening' issued by the Ministry of Construction in 1993. The 'Regulations' define the main criteria for urban greening in China, including 'public green space per capita', 'average green cover percentage' and 'greening rate'. In relation to the criteria, it set up the quantitative norms and urban greening goals for the years 2000 and 2010. For example, the average green cover percentage of a city should reach 30% by 2000, and 35% by 2010 (*Circular about issuing*, 1993). Annex 5, Table A5.3 shows the main content of the norms.

Since 1992, China has had a national competition awarding the title of 'National Garden City'. In 2000, the Ministry of Construction formally published the 'Norms for National Garden Cities'. These include both quantitative and qualitative norms for evaluating cities striving to become a 'National Garden City', including criteria and norms for organization and management, planning and design, cultural landscape preservation, green space construction, park construction, ecological environment construction, municipal facility construction, and so on. One qualitative criterion is that the city has already developed an 'Urban Green System Plan' that has been approved and included in the Master Plan. Moreover, the green system plan needs to have been strictly implemented and should have achieved good ecological and environmental benefits. The quantitative criteria (e.g. greening rate and green coverage percentage) for a 'National Garden City' are slightly higher than those in 'Regulations for Norms for Planning and

Establishment of Urban Greening' (*Norms for National*, 2000) (see Annex 5, Table A5.4).

Greening of city roads is an important part of urban green system planning as well. In 1997, the State Council issued norms for greening of city roads within the 'Code for Planting Planning and Design on Urban Road (CJJ 75-97)'. It provides quantitative and qualitative norms for greening design of urban roads, roundabouts, squares (plazas) and parking, as well as relations between road greening and other municipal facilities (e.g. power lines, underground pipe etc.) (*Code for Planting*, 1997). The greening rate for roads are to be defined when planning the boundary lines of urban roads (*daolu hongxian*) (see Annex 5, Table A5.5). There are also quantitative and qualitative norms for planting the medians of urban roads, as well as for roadside green space.

Table 4.5. *Available (until Feb. 2008) national and professional norms/standards for planning and designing urban green space in Chinese cities.*
Sources: *Standards and Norms* (2007); Tongji University (2003, p.40).

Name	**Code**	**Year issued**
Regulations for Norms for Planning and Establishment of Urban Greening		1993
Norms for National Garden Cities		2000
Classification for Urban Land and Standard for Planned Construction Land	GBJ137-90	1990
Code for Public Park Design	CJJ 48-92	1992
Code of Urban Residential Areas Planning & Design	GB 50180-93	1993/2002
Code for Planting Planning and Design of Urban Roads	CJJ 75-97	1997
Code for Scenic Area Planning	GB 50298-99	1999
Design Specifications for Highway Environmental Protection	JTJ/T 006-98	1998
Standard for classification of urban green space	CJJ/T 85-2002	2002
Code for Construction and Acceptance of Plant Engineering in City and Town	CJJ/T 82-99	1999
Standard for Basic Terminology of Urban Planning	GB 50280-98	1998
Code for Vertical Planning on Urban Fields	CJJ 83-99	1999
Standard for Basic Terminology of Landscape Architecture	CJJ/T 91-2002	2002
Standard for drawing in urban planning	CJJ/T 97-2003	2003
Code for Urban Green Space Design	GB50420 - 2007	2007

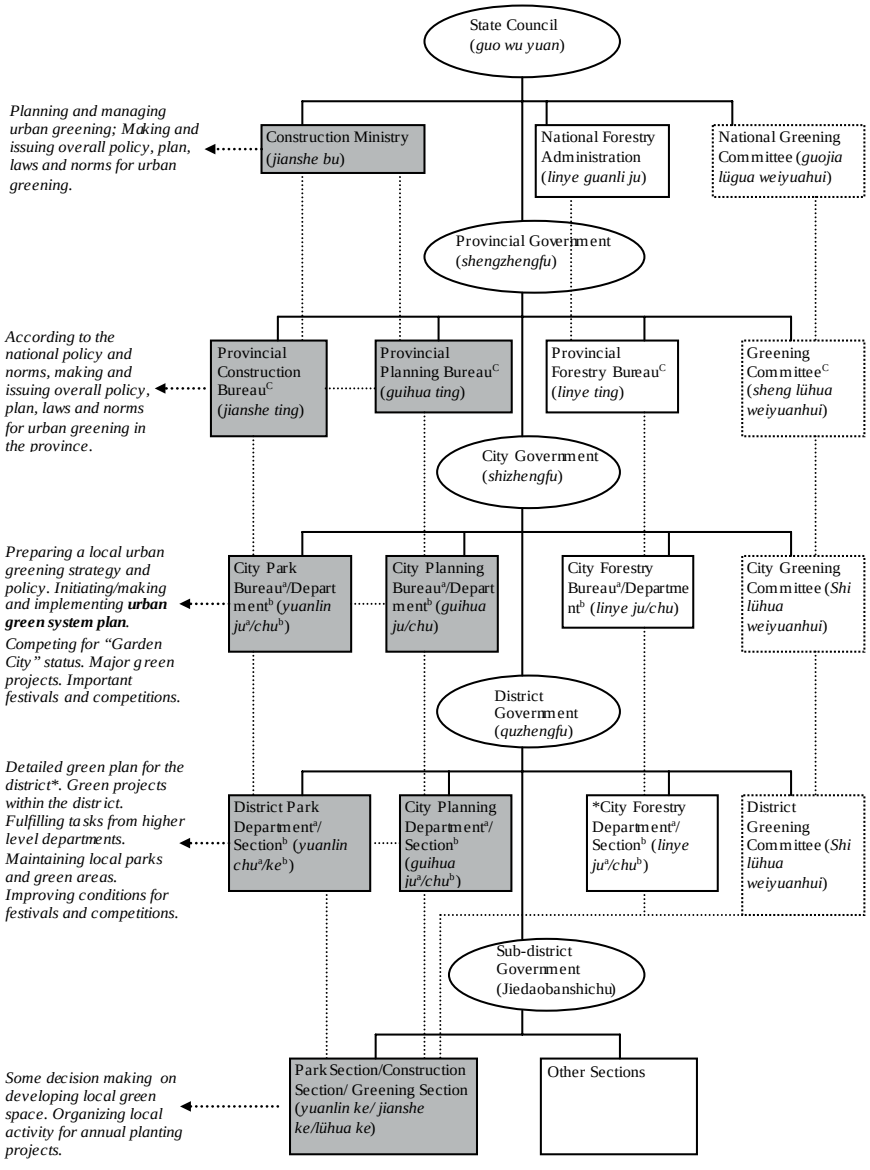
Note: The GB prefix is for a national standard. The CJJ prefix refers to a professional standard.

ORGANIZATIONS FOR URBAN GREENING (INCLUDING URBAN GREEN SYSTEM PLANNING)

There are two main types of departments in charge of urban greening-construction departments (including city park departments and city planning departments) and forestry departments. There is a very clear division of tasks between these two categories of departments, and this division is more or less defined by the city's boundary. Greening tasks within the city boundary belong to the construction departments, while those tasks outside the boundary, but still within the city's administrative border (suburban and county land), belong to the forestry departments. Each department has bodies on the different levels of governments. Figure 4.1 shows the government structure and the main tasks of the respective governmental bodies where urban greening and urban green system planning are concerned.

The task of developing and implementing the urban green system plan is carried out cooperatively by the city park department and city planning department, both operating at city level and both belonging to the construction sector. According to the city's statutory organizational structure, normally one department takes the main responsibility and the other supports. In most cities, the Park Department is the initiator and takes most of the responsibility for urban green system planning. Very often, the task of developing an urban green system plan is assigned to an external planning institute. When necessary, the responsible departments will consult with other relevant statutory departments, which should give support during the urban green system planning process. Forestry Departments and the Greening Committee, through organizing afforestation activities, also play an important role in urban greening and in the implementation of the urban green system plan.

Since the 1990s, 'open up (development) zones' have been developed in many Chinese cities (see Section 4.3); sometimes they are called 'Economic Development Zone', 'High-tech. Development Zone' or 'New Industrial Zone'. 'Open up zones' often have higher status in the organizational hierarchy of a city than ordinary city districts. They also enjoy special policies for reduced control of investment and trade. Often the Administrations of 'open up zones' work independently as special units, and they are less controlled by the bureaus at the city level. With the 'open up zones', the organisational structure for urban greening becomes more complicated. For example, it is the Administration of an 'open up zone' that is responsible for urban construction and urban greening within the zone, and not the City Park Bureau or City Forestry Bureau.



Note: Organizations in shaded boxes deal with urban green system planning
a. In a major city
b. In a small city
c. 4 cities in China do not have this level—Beijing, Tianjin, Shanghai and Chongqing. They are directly under the State Council.
* Only some districts as needed

Figure 4.1. *Main government structures and their main tasks in urban greening in China.*

4.5 Summary

Chinese urban green space planning and design has a strong cultural dimension. As part of Chinese culture, old Chinese philosophy (Confucianism and Taoism) had influences on urban planning and garden design in ancient China. It is the Taoism philosophy, together with its influences on Chinese mountain and water culture and the classic Chinese garden design, that has had a stronger influence on contemporary urban green space planning and design in China. Taoist philosophy strove for asymmetry and being in harmony with nature. Because mountains and water have symbolic meaning and evoke artistic mood, they are considered important elements in urban planning, for example through a harmonious city-environment relationship, water-side cultural buildings and a city-mountain axis. Urban green space planning often tries to optimize the natural mountain and water characters of a city/location. Imitating natural mountains and waters (even with extensive earthwork, being rich in symbolism), seeking a poetic mood and enclosure of scenic wonders constitute the main characteristics of classical Chinese garden design. These approaches can still be recognized in the development of contemporary green spaces.

For political, ideological and economic reasons, urban greening was given low priority in the recent history of communist China. However, since China's 'opening up' policy, especially since the 1990s, urban greening has gained strong attention from the national government. Laws, regulations, standards and norms have been increasingly promulgated in order to guide and promote urban greening. At the same time, China promotes high speed urbanization as an approach to economic development, which also creates big challenges for urban greening. Being aware of the challenges and emerging problems such as the loss of urban green because of urban restoration and expansion, the national government attempts to strengthen the role of urban planning, especially for protecting urban environment. Statutory urban green system planning is increasingly emphasized and developed as one of the measures for this goal.

The Soviet urban green system planning tradition, Western urban greening ideas and Chinese garden tradition all have influences on the development of the Chinese urban green system planning approach. Based on recent urban greening practice, this approach has had a rapid development since the 1990s, especially when viewing the growing number of related regulations, standards and norms. From an overall perspective, Chinese green system planning can be characterized as a top-down planning approach. Chinese green system planning has comprehensive policies, regulations, criteria and guidelines at the national level. Based on the statutory planning system, these national policies are passed down to the local level. The top-down planning approach can be also seen from the actor

and institutional perspective. The national government plays the lead role in promoting urban greening and urban green system planning. A series of campaigns for urban greening, for example ‘National Garden Cities’ and ‘duty-tree-planting’, are also organized at the national level. Through the top-down institutional system, the enthusiasm for and priority given to urban greening are passed on to the local level.

Currently, the research and practice of urban green system planning is mainly focused on statutory urban green system planning and preparation of Urban Green System Plans at the city level. Application of the national policies and debates on urban greening discourses can mainly be seen during the preparation of statutory urban green system plans. In general, there is a growing emphasis on promoting ecological functions in the statutory urban greening system planning. Other discourses from social and economic perspectives also exist but are less focused. A series of quantitative criteria characterizes Chinese statutory urban green system planning. Through these quantitative criteria, a certain percentage of urban green space is allocated to a city, a district, a residential area, a road or a public building. Although the statutory planning system also provides qualitative criteria in the goals and evaluation system for urban greening and urban green system planning, the quantitative criteria seem to play a stronger role. Traditionally focusing mainly on urban zones, the Chinese statutory green system planning has started to consider natural and man-made green areas at a regional scale as well. As a sectoral part of urban planning, Chinese urban green system planning used to be a component of urban planning in theory, but in practice was actually not much integrated into urban planning. However, there are growing discourses on promoting the integration between them.

Very little literature focuses on the process of urban green system planning in practice and its implementation stage. However, the national City Planning Act (1989) and regulations define the procedure for statutory urban green system planning. Actors involved in statutory urban green system planning are mainly limited to the public sectors and external planners. The city government is the leading actor, represented by city leaders. Other stakeholders within the private sector and the public at large are not much involved in the planning process, and neither are external experts from other relevant professions. Communication between actors and stakeholders is not emphasised in statutory green system planning. Public participation is encouraged in statutory green system planning, but is limited to rather lower levels such as public surveys and public exhibitions. There is in general limited practice of public participation. Therefore, (urban green system) planning is still seen as the development of scientific and comprehensive plans, and planners are experts for this task.

5. PLANNING AND DEVELOPMENT OF URBAN GREEN SPACE IN WEIHAI

5.1 Introduction

CHAPTER OUTLINE

This chapter presents the main results of the study of urban green space planning in Weihai. The focus will be the general circumstances at the city level. The chapter sets out to answer the following questions:

How have the city and urban green space developed historically?
What are the arguments that have been used for urban green space planning and development in Weihai?
Who are the main actors in the processes of urban green space planning and development, and how do they interact during the process?
What are the activities and outcomes of the recent urban green space planning?

Each of the following four sections tackles, respectively, the four questions above. After a short introduction of the case city Weihai and the sub-case green projects in section 1, section 2 starts with a historical overview of Weihai's city development and urban green space development. Section 3 analyses goals for planning and development of urban green space, based on the main planning documents and interviews with the main actors in urban green space development practice. Section 4 presents the main actors and organizational structure related to urban green space, followed by analysis of the planning process. Section 5, finally, presents the main activities and outcomes of urban green space development in recent years, as well as people's attitudes towards urban greening.

INTRODUCTION TO WEIHAI CITY

Weihai is a sub-provincial capital city on the Shandong peninsula (see Figure 5.1.1). Its jurisdiction covers Weihai central city and three county cities (Rongcheng city, Rushan city and Wendeng city), jointly called the Weihai city region. This city region is located at the eastern tip of Shandong peninsula. The total area of the city region is 5698 square kilometres, with a population of 2.49 million at the end of 2005 (*Statistical Yearbook of*, 2006). Three sides of the city are surrounded by the Yellow Sea, with 986 kilometres of coastline. To its east, the city looks towards the Korean peninsula and Japan. Weihai's has a mild, windy continental climate with some coastal characteristics, resulting in a cold spring, cool summer, warm autumn and mild winter, as well as little difference between day and night

temperatures, and the location is windy. Weihai is located in an area of low mountains and hilly terrain (*Urban Green System*, 2002).

Weihai central city is located in the northern part of the city region (see Figure 5.1.2). The city as a whole covers 769 square kilometres. At the end of 2005, the population of Weihai was 0.61 million (*Statistical Yearbook of*, 2006). The coastline of Weihai is 133 km long. Mountains and hilly landscape occupy more than half of the whole city area. The two highest mountains (Likou Mountain and Zhengqi Mountain) are about 500 meters high. The mountains and the coastline more or less define the form of the city. The historical city centre started at a tract of flat land by the coast, to the east facing the historical navy base 'Liugongdao' Island. The city then grew along the coast and between the mountains, with an irregular shape. Mountains and coastlines create a characteristic cityscape (*Master Plan of*, 2005; *Urban Green System*, 2002). By 2003, the built-up area in the city central zone covered 43.3km^2 (China Geology University, 2004).

Although the jurisdiction of Weihai central city covers the whole city region, its administrative power is normally exerted within the central city area, excluding the three county cities. These three county cities are economically independent and have their independent city councils, although Weihai central city has the administrative power to suggest and direct the development of these three cities (Huang, pers.comm.). Geographically, the built-up areas of the three county cities are also separated from Weihai central city. This study mainly focuses on Weihai central city. Unless noted otherwise, 'Weihai' or 'Weihai city' will be used to refer to Weihai central city. The traditional main industries of Weihai city are fishery, machinery production and textile production. In recent years, tourism and housing have become growth industries (*Master Plan of*, 2005).

Since the end of 20th century, Weihai city has developed a reputation as a green and clean city, offering a high quality of life. Among many honours, Weihai has been awarded the accolades of 'National Hygiene City', 'National Garden City', 'National Model City in Environment Protection', 'China Excellent Tourism City' and 'National Greening Model City' (Forestry Bureau, 2006; *Master Plan of*, 2005). It was twice granted the award for 'Best Practices for Improving Living Environment' by the United Nations, and received the '2003 UN Habitat Scroll of Honour Award'. In June 2007, the Ministry of Construction of China honoured Weihai and ten other cities as 'National Ecological Garden Cities'. This is a high honour, as cities are selected from existing 'National Garden Cities' (*Weihai ranks among*, 2007). Figure 5.1.3 gives an impression of Weihai central city.

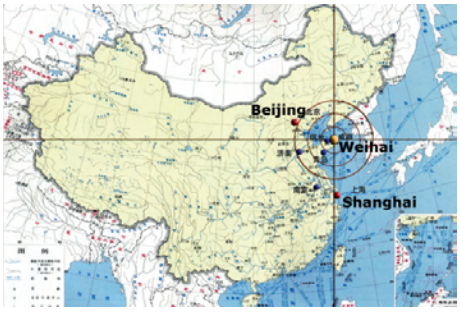


Figure 5.1.1. *Location of Weihai City*
Source: *Master Plan of* (2005).

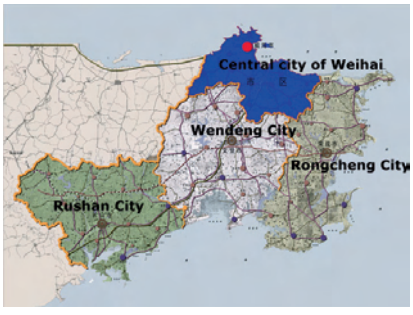


Figure 5.1.2. *Weihai City in the city region.*
Source: *Master Plan of* (2005).

Figure 5.1.3. *Weihai central city.*
Source: Park Administration of Weihai City.

To a certain extent, honours awarded to Weihai are due to its natural endowment, thanks to the sea and hills. However, major efforts have been made to further develop this green city. Particularly in the last decade, urban green space has been one of the top issues in Weihai's development. This is partly because the natural landscape plays such an important role in the city image and city development. In addition, the vision of taking full advantage of the natural endowment and using a "green image" for city development has made urban green space development into one of the top priorities on the political agenda. Every year, there is at least one city-level important project with focus on urban green space. The budget for developing new urban green space has increased dramatically (e.g. Du; Huang, pers.comms.).

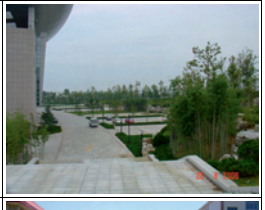
INTRODUCTION TO THE SUB-CASES

As introduced in the methodology chapter of this dissertation (see Chapter 3), 11 recently developed urban green spaces were included in the study to gain in-depth understanding of the concepts and process at the project level, as

well as their relationship with urban green space planning and development at the city level. Table 5.1.1 presents brief information on these 11 sub-cases. Figure 5.1.4 shows the locations of these sub-cases in Weihai City. More information about the development of these urban green spaces can be found in Annex 6. This Chapter will mainly concentrate on the findings of the investigation on urban green space planning and development at the city level with reference to these sub-cases.

Table 5.1.1. *Overview of the sub-cases in the case study of urban green space planning and development in Weihai city. (Continued on next page).*

Type	Name	Location, developer, construction time	Development purposes	Features	Image
Public parks	**Weihai Park**	Eastern coast of Weihai; Weihai city government; Nov. 1999- Sep. 2001.	To improve the transportation function of the Southern Haibin Road; to optimize the coastal landscape; to promote the image and taste of the city.	Long coastal park for the city; land reclaimed from the sea; developed as a city image project; properly designed; many sculptures; large percentage of ground cover; limited residential area in the surroundings; to be viewed; limited recreational use.	
	Haishang Park	Eastern coast of Weihai (south of Weihai Park); Administration of Weihai Economic Development Zone; March, 1999- Oct. 1999 (1st stage).	To improve the soft environment for attracting investment; to promote the image of Econ. Deve. Zone; to provide recreational space for this Zone.	Comprehensive city park; image project for the Economic Development Zone; no comprehensive design, constructed directly; various spaces and facilities for recreation; close to residential areas; heavily used.	
	International Beach Park (Haijing Park)	Northern coast of Weihai; Weihai High-tech Zone; Nov. 2001- May, 2002 (1st stage); End of 2002- May, 2003 (2nd stage).	To provide a beautiful environment for tourism; to improve the investment environment and the reputation of High-tech Zone.	Beach park; attractive sand beach; green spaces and squares for resting; with facilities for park recreation and exercise; busy tourism and local resident use.	
Road greening	**Qingdao Road**	North-south city main road parallel to the east coast; Weihai city government; 1999.	To improve the function of the city; to improve the living environment of the citizens and to improve the image of the city.	City access road and city main road with a green image. 5 meter median, attempts as far as possible to achieve 20-30 meter wide green verge on both sides; large colour pattern in the median; vegetation creates themes for enjoy when using the road.	

	Huanhai Road 2nd stage	Tourism road along the coast; Initiated by Sun Jia Tan Town, supported by Huancui District government and Weihai city government; April 2004- June 2005.	To provide a proper coastal road; to develop a high standard tourism resort in this area.	A stretch of newly developed road on the slope of the hill, very close to the sea; many viewing points towards the sea; parking places and viewing points alongside the road; good vegetation cover along the road.	
Institutional green space	**International Exhibition Cent-**	West side of South Haibin Road, facing Weihai park; Weihai City; 1999.	Integrated green space development for an important public city building	Simple design; integration with road greening; consideration given to designing a green axis to connect between the mountains and the sea; consideration of Weihai's urban green system.	
	Shandong Univ., Weihai Campus	High-tech Zone, close to the north coast, south of Mazi Hill; the university; mainly after 1997 step by step.	To make a 'garden' campus; to improve educational/cultural characteristics; to promote reputation of the university.	Many green spaces in the campus; preserve some of the original coastal protection pine tree forest and used for resting; some small campus gardens with cultural elements. Sculptures as visual foci.	
Other types of public green spaces	**Mingcui Park**	Economic Development Zone; Goubei Village Government (a village within the city); March 2005- March 2006.	To provide recreational space to the villagers and to develop tourism	Forestation (2-3 year small stands) on the barren hills, both by the villagers and the 'duty-tree-planting' activities; a few ornamental trees; traditional Chinese architecture as resting, viewing place and visual focuses.	
	Shuangdao-Likou Mountains Forest Park	Shuangdao Forest park is in the High-tech Zone; Likou Mountain is south of Weihai city; Local villages, Huancui District Government and Forest Bureau of Huancui District.; only planned, not formally developed.	To develop and make use of the forest resource—to protect the ecological resources, to provide a recreational place for the citizens; to develop tourism.	Shuangdao Forest Park, planted coastal protection pine tree forest, National Forest Park, managed by Forest Bureau; Likou Mountain is the main green core of Weihai, with natural vegetation cover.	
Private green spaces	**Haishang Minzhu Residential Area**	Next to the east coast, Economic Zone, north of Haishang Park; Real estate developer; Winter 2001- Winter 2002.	To raise the housing price; to achieve a high standard residential area.	Residential area believed to be relatively good in environmental quality; with many resting structures and flower beds.	
	Huaxia Pham. Ecological Park	Eastern coast in economic zone; Private enterprise; 2003 – present.	To provide good environment for the employees; to contribute to the city's environment; to develop future tourism.	Forestation on the hills; lakes, tourism village; future golf course.	

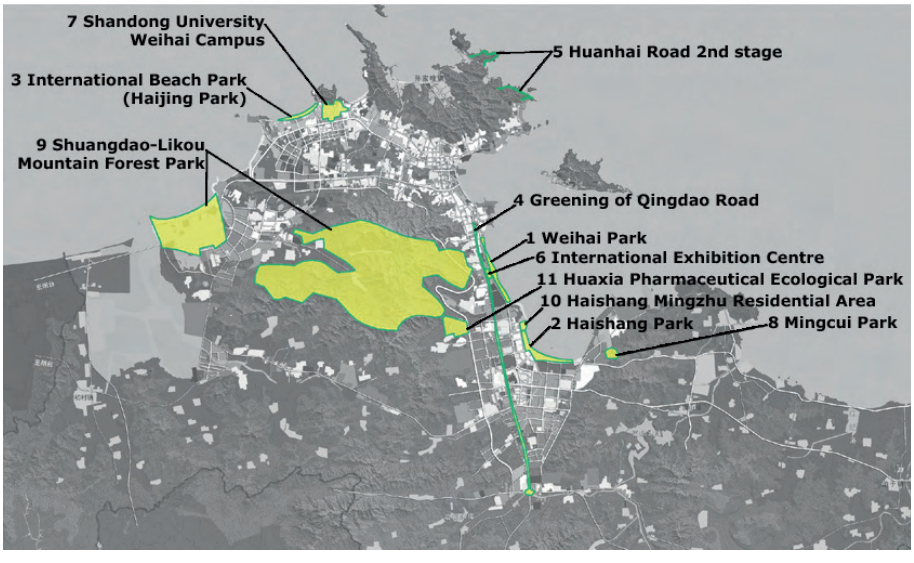


Figure 5.1.4. *Locations of the sub-cases cases in the case study of urban green space planning and development in Weihai city.*

5.2 A glimpse of Weihai's history and urban green space development

This section will give a brief overview of Weihai city's urban development and urban green space development in recent history. Following a chronological order, the development is introduced through five periods: (1) federal state period, (2) British concession period, (3) national government period and the War period, (4) Mao period and (5) the period after the opening-up policy**.** Finally, key findings from this historical review are given.

THE DEVELOPMENT OF THE CITY AND URBAN GREEN SPACE

Federal state period (1398-1897)

The history of Weihai city dates back to 1398 AD during the Ming dynasty. Troops were stationed in the area to defend against foreign invaders. It was called 'Weihai Wei', with 'Wei' meaning 'garrison'. The 'garrison' city was built in 1403 in the hilly pre-urban landscape by the coast, mainly for defence needs. It was a rectangular walled city, 0.55 km^2 in area (Deng, 2003). Three sides of the city bordered the mountains. Only the eastern side, the city faced to the sea, with Liugongdao Island situated in front of it (Figure 5.2.1). Following traditional Chinese city planning principles, the city was well-situated in its natural surrounding, with consideration given to its military functions (*Process of urban*, 2004; Zhang & Sun, 1998). In 1887,

the government of the Qing Dynasty developed Weihai Wei as 'North Sea Navy Garrison' (Deng, 2003).

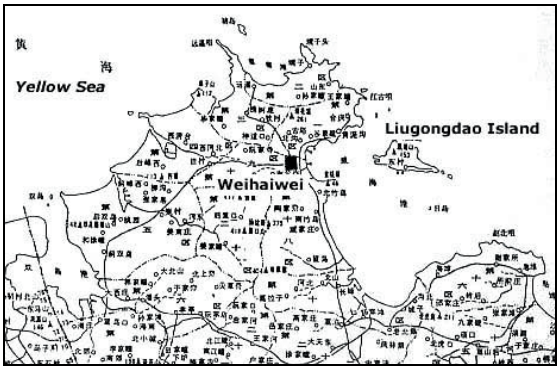


Figure 5.2.1. *Location of old Weihaiwei city.*
Source: Deng (2003).

There is no record of green spaces in the old Weihai Wei. The old images show only some scattered trees (not even road tree plantings) within the city walls (see Figure 5.2.2).

Figure 5.2.2. *Weihaiwei city in 1933. Liugongdao Island is on the horizon in the centre.*
Source: Deng (2003).

British concession period (1898-1930)

After the Sino-Japan War of 1894-1895, Weihai Wei was forced to become a British concession in 1898. Weihai was reclaimed by the National Government of China in 1930 (Deng, 2003). In the eyes of the British, the old Weihai Wei city was just a "village with a wall" (*ibid.*). During the concession period, the British concession government developed a new city district in a north-eastern direction along the harbour and outside the walled city. The belt-shaped new district was about 1.3 km^2 in area and included a business area, residences and governmental institutions of the British concession government. By 1930, the built-up area of the city was about 4 km^2, including the walled city and the new district (see Figure 5.2.3) (*Process of urban*, 2004).

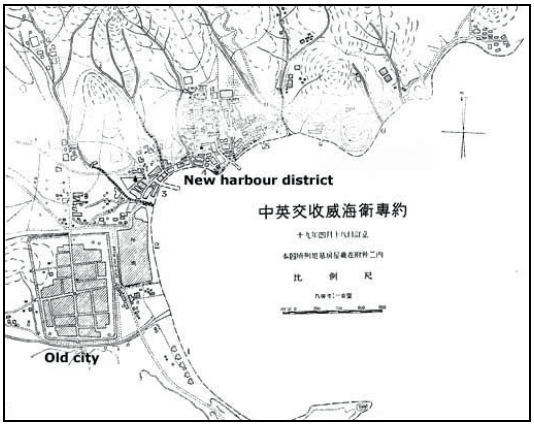


Figure 5.2.3. *Weihaiwei in 1930.*
Source: Zhang & Sun (1998).

Early attempts at urban green space development were made during this period. The concession government had the ambition of developing Weihai into a tourism resort for the British army and Europeans in general. Trees and flowers were imported from abroad. Planting mainly focused on Liugongdao Island and the new harbour district. From 1907 to 1917, more than three million trees were planted on Liugongdao Island. Two public parks were built in the new district. One was the 2600 m^2 Triangle Park in the business centre, close to the harbour (*Parks and greening*, 2004) (see Figure 5.2.4). The other was Dongshan Park on and around the hill behind the most luxurious hotel at that time, King's Hotel (Figure 5.2.5). The park had a tourism function and was used for recreation, sport and viewing the sea (see Figure 5.2.6) (Deng, 2003).

Figure 5.2.4. *Triangle Park in 1936.*
Source: Deng (2003).

Figure 5.2.5. *King's Hotel in 1933.*
Source: Deng (2003).

National government period and the War period (1931-1948)
In the first years after the National Government regained Weihai Wei, the city underwent active development. The National Government tried to plan and manage the city as a whole, including the walled city and the new district. The old city wall and the gates were gradually demolished during these years. Huancuilou Park was built, and Triangle Park and Dongshan Park were rebuilt. The Second World War damaged many buildings as well

as parks in the city (Deng, 2003; *Parks and greening*, 2004). After the Second World War, the administrative border of Weihai city was changed many times. However, the city expanded little (*Process of urban*, 2004).

Figure 5.2.6. *Advertisement for King's Hotel during the British concession period.*
Source: Deng (2003).

Mao period (1949-1977)

With the establishment of the People's Republic of China in 1949, Weihai Wei City was set up and renamed Weihai City (county level) in 1951. Because it was considered a military base, building development was restricted. The Cultural Revolution (1966-1976) also hindered city development. By 1978, the built-up area of the city had reached 6 km^2 (*Process of urban*, 2004).

There were almost no greening activity during the first years after the foundation of the People's Republic of China in 1949. Urban green spaces were overlooked and there was no special official administration taking care of urban green space. During the 1950s, the remains of the old parks were developed into orchid gardens (e.g. Huancuilou Park) and nurseries (e.g. Dongshan Park). The City Construction Bureau was founded in 1958, with four staff being responsible for greening and management. Urban green space gradually came under management. During the Cultural Revolution, a few newly built green spaces were destroyed or damaged. For example, a new park was built in the city centre ('*da cao chang'* area) during the 1960s, but was destroyed as "a product of the bourgeoisie" during the Cultural Revolution (*Parks and greening*, 2004). Since 1976, road greening has gained more attention. By 1976, when the City Park Team (48 person) was

founded, there were only 21 hectares of urban green space in the built-up area of Weihai (*Parks and urban*, 2004). From the 1950s to the mid-1960s, large tracts of black pine *(Pinus thunbergii)* forest were planted along the coast of Shandong peninsula, including the Weihai area. Following the afforestation strategy, these woods acted mainly as wind-reduction belts and for stabilising sand. Some barren mountains around Weihai were also afforested during those days (Huang; Li, X., pers.comms.).

The period after the opening up policy (1978-present)

In 1978, the former leader of P.R. China, Deng Xiaoping, introduced a series of new policies for the country's economic development, basically introducing principles of capitalism alongside those of communism. Development in coastal regions was accelerated and urban development became faster. In June 1987, Weihai City was upgraded to a regional (sub-provincial) capital city. The original Weihai city was renamed as Huancui district and three other counties were drawn into the jurisdiction of Weihai city. The regional city border was enlarged to more or less the current size. The area of the Weihai city was 408 km^2, with a built-up area of 13.1 km^2. Since then, development has been faster. In March 1991, Weihai High-tech Area was set up, followed by the Economic Technology Development Area in October 1992. The administrative committees of both areas are branches of the city central government. The set up of the two special development areas speeded up urban expansion. By the end of 2000, the built-up area of Weihai had reached 43.7 km^2 and Weihai city covered 731 km^2 (*Process of urban*, 2004). Figure 5.2.3 shows the development of the built-up area of Weihai city.

Since the Second World War, Weihai's city plan has been prepared or revised seven times, viz. in 1958, 1971, 1978, 1985, 1989, 1994 and 2004. Only the city plans of 1978 and 1994 are still extant. Other official city plans were lost for unknown reasons. The 2004 version of the master plan focuses on the current 769 km^2 of Weihai central city, with consideration of the 5698 km^2 city region (*Process of urban*, 2004). Weihai city's urban development from a small garrison to a sub-provincial capital city is illustrated in Figure 5.2.7.

After the first Master Plan in 1978, the city government started to make efforts in urban construction. Starting from 1980, urban green space development was promoted. In the 1980s, the prevailing strategy was widespread greening to enlarge green areas. This included massive tree planting, enlarging of former parks, development of new public parks, gardens, public square green spaces, road greening, and developing forest parks and greening in private courtyards and courtyards belonging to industries and institutions. In 1984, the city government announced the greening policy of "see space, insert green; find space, insert green; create

space, insert green". This policy also had as a principle that buildings, roads and green spaces take equal spaces; no new building development is to take place in the old city; the demolished areas in the city are used for public green spaces. The greening activities during the 1980s resulted in many green resources available today. Many mature trees present in the city were planted during this period (*Parks and greening*, 2004; Sui, pers.comm.).

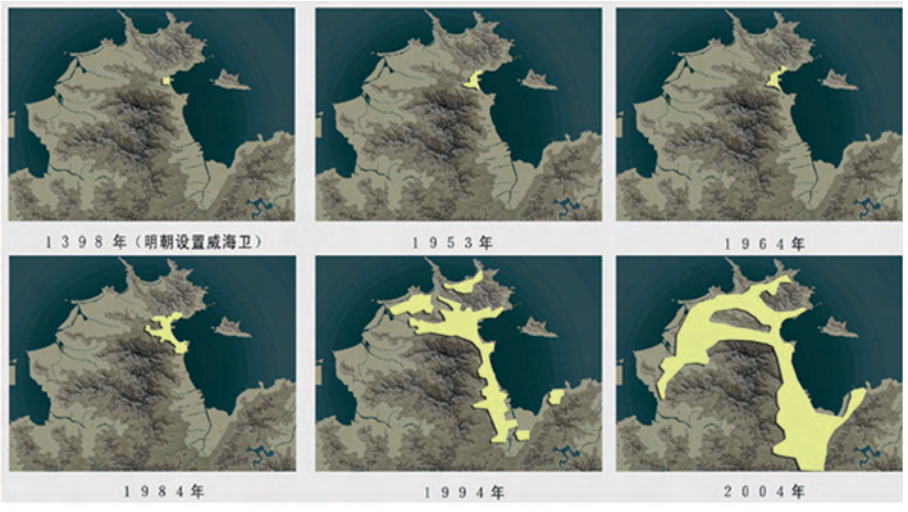


Figure 5.2.7. *Weihai City development process (built-up area).*
Source: *Master Plan of* (2005).

During the 1990s, the budget for developing urban green space continued to grow. The main focus of urban greening was on greening the barren hills, developing urban parks and road greening (Sui, pers.comm.). At the same time, policies and strategies for urban green space started to be developed. In 1994, Weihai made a new version of the Master Plan (directed towards 2000). In the same year, the city made the first 'Urban Green System Plan'. In 1995, Weihai came up with the first legal regulation 'Measures for Greening of Weihai City (*Weihai lvhua banfa*)'. In 1996, Weihai city was awarded the status of 'National Garden City' (*Parks and greening*, 2004).

Since 1997, urban greening in Weihai has made a "great leap forward" (Huang; Sui, pers.comms.). Urban greening gained special attention in the context of urban development. Related to the goal of developing into a city suitable for living in and tourism, an overall strategy for urban greening has gradually emerged. The city intends to develop some so-called 'Projects of Fine Quality' (*jingpin gongcheng*), represented by several new city parks along the coast. At the same time, widespread urban greening continues,

focusing on greening in residential areas and road greening. As discussed above, Weihai has received many awards for its pleasant urban environment. Although I take into account this history of city development in general, the present study mainly focuses on urban green space development since 1997.

SUMMARY

A brief historical review of Weihai's development shows that both the natural conditions and social-economic context have influenced the city's urban green space development. First, the natural terrain and landscape resources influenced urban form and character of city and urban green space. Although Weihai started as a planned grid city, with the expansion into new terrain, the natural landscape finally moulded the city into an asymmetrical form. Because Weihai has rich natural landscape resources, its potential as a tourism resort was recognized as early as the British concession period. Now, the city's landscape character has once again become one of its defining characteristics, determining how further urban green space development shall proceed.

Secondly, the relatively stable socio-economic context and support from the government have been prerequisite for urban construction and especially for urban green space development. A stable socio-economic situation secured supporting policies, sound organization and budgets for urban green space development. It may be seen that both relevant policies and organizations in relatively stable periods had direct influence on promotion of urban green space development. On the other hand, during the Second World War and the Cultural Revolution, not only was the process of urban green space development interrupted, but urban green spaces were also damaged.

Thirdly, large scale urban planning and urban development provide opportunities for urban green space planning and development. Urban green space development is a part of urban development. Weihai's fast urban green space development often occurred when urban development was also relatively rapid, for example during the British concession period and after Weihai city was upgraded to a sub-provincial capital city.

Fourthly, ideology related to urban green and the recreational needs and habits of the leading class also influence urban green space development. Urban green space development has had different objectives during different periods of time. During the British concession period, the Western way of seeking for leisure was brought to Weihai and the first public parks and tourism resorts were developed. During the Cultural Revolution, recreational functions of urban green space were criticized and the fuction of urban greening was reduced to mere production purposes. During the post-revolution period, different values of urban green space gradually became recognized, especially the recreational values. As economic circumstances

have improved during recent years, recreational urban green space has become a main topic.

Historical urban development and green space development set the stage for urban green space development today. Being a small city with a slow urban development during its history, Weihai has been fortunate that its surrounding natural landscape was relatively well preserved. The constraints the natural terrain placed on urban development turned into a great potential for current urban environment construction. The establishment of the coastal protection forest in the 1950s and the greening of the overall urban environment in the 1980s have left treasures that provide a basis for current urban green resources. Even though the few old parks and gardens in Weihai city were not well-preserved, their history provides valuable clues on which current green space development may be based. One example of this is the idea of developing tourism.

5.3 Goals and instruments of urban green space planning and development

This section starts with an introduction to the contemporary planning context in Weihai, followed by an in-depth review of the discourse on Weihai's contemporary urban greening. Four aspects of the urban greening discourse are tackled here: the ecological aspect, the structural aspect, the social aspect and finally the economic aspect. For each aspect, the discourse was investigated by reviewing the goals and instruments formally described in the planning document, the actual goals and instruments reflected by the actors able to observe the urban greening practice, and finally by looking at challenges to achieving the goals in practice (as mentioned by the interviewees).

CONTEMPORARY PLANNING CONTEXT

Driving forces for contemporary urban green space planning and development

Weihai has experienced very fast urban green space development in recent years. The honours that Weihai has gained show that in China it is among the pioneer cities on urban greening issues. What are the major driving forces behind Weihai's urban greening process? This question was asked of the interviewees. Two levels of driving forces were mentioned. First, the city government's or city leaders' pursuit of a good city image has been a major driving force for contemporary urban greening. A second major driving force is the city leaders' pursuit for career enhancement and personal success.

Urban greening has been a general discourse at the national level and provincial levels in China (see Chapter 4). Award systems are developed to promote urban greening processes, among which are the 'National Garden

City' and 'National Tourism City' titles. Competition for economic development and simply for prestige have motivated Weihai authorities to compete for these awards (Du, Er; Li; Sui; Tian; Wang, Z.; Wu; Xu, G.Y. pers.comms.). The city government and city leaders play the most important role in this process. As Wang, Z. (pers.comm.) mentioned: "The pursuit of a good city image has promoted the urban greening process, and the ultimate goal is the city's economic development. The city leaders' attention secures the success of urban greening of the public green space (…). The institutional and residential green spaces depend mainly on the market mechanism". Du (pers.comm.) stated: "The city leaders' vision and attention have promoted the urban greening process of Weihai most. In order to be recognized in the competition among cities (for economic development), Weihai could only do something based on its existing natural environment. Urban green space development has been very effective for realising a good city image".

Many interviewees also emphasised that the city leaders' pursuit of their own career advancement is an important driving force for the rapid urban greening process of Weihai (Huang; Qi; Zhang, pers.comms.). "The pursuit of career achievement is also an important driving force for urban greening. An old saying is: 'one mayor, one road'. The city leader during each period develops his own project and takes care of his own budget." (Huang, pers.comm.). Zhang agreed (pers.comm.): "The better the image of a city, the better image the city leaders will obtain. Urban green space is the most visible feature when a city leader is evaluated. It represents his or her political achievement. If a city leader does not undertake any environmental improvement or municipal infrastructure construction, it seems that he does not do anything".

Several interviewees also mentioned other driving forces, for example, the general fashion of urban greening in China of recent years and the awareness among the public of benefits of the urban environment, city image and urban green space (Li; Sui; Wu, pers.comms.). Others think that the rapid urban greening process is a natural product of the current social, economic and physical development of Weihai city (Huang; Tian, pers.comms.).

Overview of the planning documents and discourses (1978- 2004)

An overview of different versions of the Master Plans of Weihai shows that the visions of Weihai city and the discourses for planning and urban greening have changed over time (see Table 5.3.1). Urban functions have evolved from more production-oriented, based on industry and agriculture, to service-oriented, strongly relying on the quality of the urban environment. The value of the natural landscape, mountains and coastline has become increasingly recognized. The city's character as a tourism city and as a place

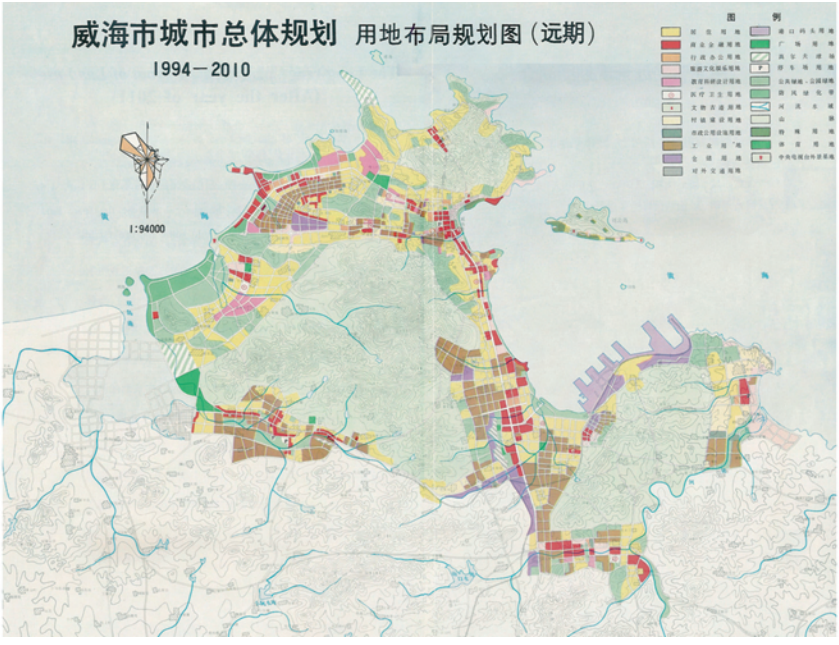


Figure 5.3.1. *Plan illustration of the Master Plan of Weihai City (1994-2010).*
Source: *Master Plan of* (1996).

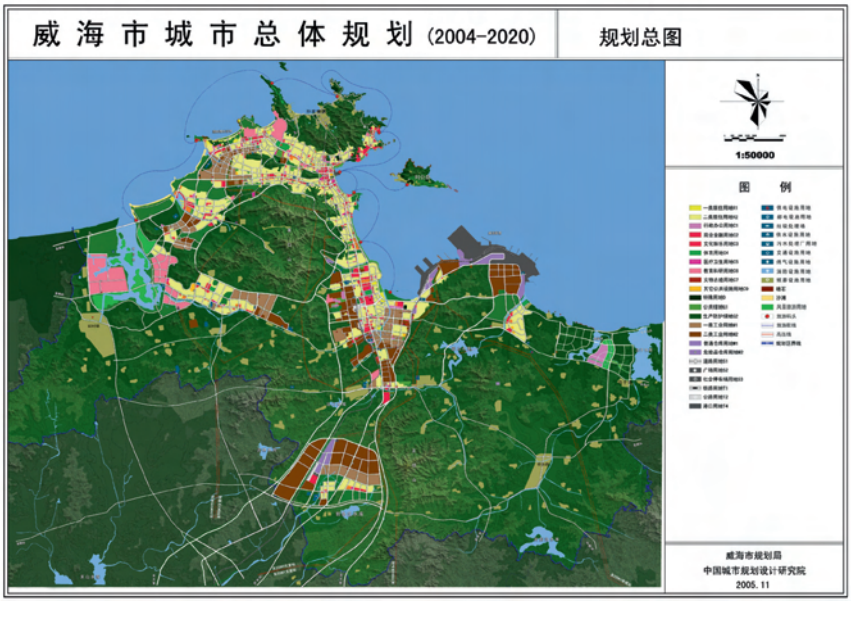


Figure 5.3.2. *Plan illustration of the Master Plan of Weihai City (2004-2020).*
Source: *Master Plan of* (2005).

Table 5.3.1. *Development of contemporary planning discourses based on Master Plans (1978-2004).*

Sources: *Master Plan of* (1979); *Master Plan of* (1996); *Master Plan of* (2005); *Urban Green System* (2002).

	Vision of the city	**Planning principles / general discourse**	**Discourse related to greening**
1978 (- 1985, -2000)	A coastal city with light industry, electronics industry, instrument & meter industry as the mainstay.	In the long run for "four modernizations", combine industry and agriculture, urban and countryside, promote production, a socialist city equipped with modern facilities; improve the city image, focusing on development of new areas and transformation of the old areas; control the size of the city central zone, "develop (into) a small city", concentration and density principle for land use; develop the city through thrift and hard-work.	"Make every corner of the land like a garden", increase public green space area, plant trees wherever possible; develop urban parks; widespread greening following urban (re)development; "point, line, area comprehensive greening system"; value of natural condition and historic Liugongdao Island for tourism.
1989 (no data)	Regional political, economic and cultural centre; and as an industrial, tourism and harbour city.	Strengthen the central city and improve its influence on the region; enhance the urbanization process; open policy at all scales; "take full advantage of the natural mountain-sea environment and create a scenic tourism city character; develop a coastal city with high-tech industry, promote an export-oriented economy, beautiful environment and comfortable living condition."	No data
1994 (-2000, -2010)	To make full use of the natural advantages and to develop into an "ecological coastal city with hi-tech industry as the mainstay"	Constructing a great modern Weihai city. "Urban structure will be multi-kernel urban belts surrounding the mountains as green cores. Before 2010, the central city will mainly be shaped by the urban belts around two green kernels. Built-up areas will be nodes in the urban belts, separated by green wedges".	Improve the environmental quality; "3 seasons flowering, 4 seasons green"; protect the coastal forest, increase the percentage of public green space, develop coastal parks, the mountain ring-road and forest parks; coastal development for tourism; control building height in the city centre, create landmarks; road landscape mainly based on greening—"green culture" and "water culture".
2004 (-2010, -2020)	Suitable for living within an urban environment; coastal city	"Scientific development concept"; protection of coastal ecology and natural resources; harmonized regional (urban-rural) development; economically efficient use of resources and land; control of urban development; sustainable development; promotion of "mountain-sea-city" city character; balance urban development and farmland protection;	Ecological environment control; fragile natural resource protection; protection of coastal forest, tourism and landscape resource; construction of urban forest parks; improve urban green space coverage and standard; improve green environment for "suitable for residence" criterion; history-culture and nature in harmony; sustainability; coastal tourism.

suitable for living in has become clear. Planning tasks have developed from construction of the central zone of the city to more regional considerations related to urban development. 'Sustainable development', ecological natural resource preservation and farmland protection have become the current planning discourses. An overall planning concept for urban greening has gradually matured. The tasks for urban greening have developed from public green space development at a small scale and widespread planting, to green structure development at a larger scale. The latter concerns, for example, natural landscape protection and the development of coastal parks and mountain forest parks. In different versions of the city plan, the discourses on urban greening have gradually become closer to those of urban planning, and urban greening has become more influential within urban development (*Master Plan of*, 1979; *Master Plan of*, 1996; *Master Plan of*, 2005; *Urban Green System*, 2002). Figure 5.3.1 and Figure 5.3.2 show respectively the plan illustrations of the Master Plan of 1994 and the Master Plan of 2004.

GOALS AND INSTRUMENTS FOR ECOLOGICAL BENEFITS

The analysis of goals and instruments of urban green space planning and development is based on both the discourse in the plans and the discourse in urban green space development practice. Two plans have been used for the analysis: One is the Master Plan of 2004 (see Figure 5.3.2) and the other is the Urban Green System Plan of 2002 (see Figure 5.3.3). The discourse in urban green space development practice is mainly obtained from interviews with the key actors.

Discourse on ecological aspects in the plans

'Ecology' was first mentioned in the Master Plan of 1994, where the vision for city development was that of an "ecological coastal city with high-tech development as the mainstay". The Plan related 'ecology' to concepts of protecting natural ecological resources and man-made coastal forests, minimizing resource cost and polluting activities and constructing a good urban ecological environment (*Master Plan of*, 1994). The introduction of the Master Plan of 2004 states that "urban landscape" and "ecological environment" are the foci. The Plan also pointed to "a city suitable for living in" as one of Weihai's development goals, which means "a city with clean air, beautiful environment, good ecology and harmonious society" (*Master Plan of*, 2005). Several chapters in this plan deal with the issue of green-blue resources protection and utilization (*Master Plan of*, 2005).

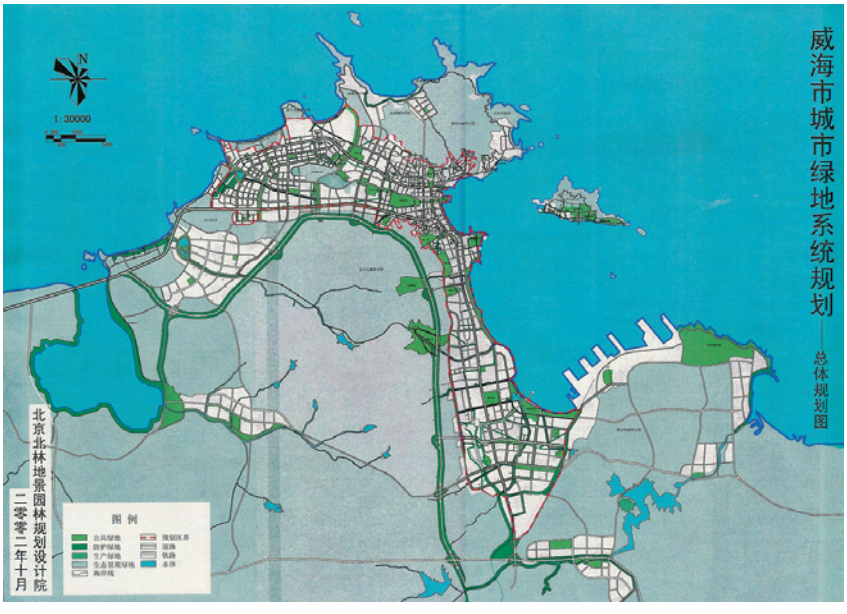


Figure 5.3.3. *Plan illustration of the Urban Green (Space) System Plan of Weihai City – General Plan.*
Source: *Urban Green System* (2002).

To preserve and optimize the good ecological environment of the city is one of the important goals for the Urban Green System Plan of Weihai (2002). The plan emphasises the vision of Weihai's urban development mentioned in the Master Plan 1994 - an ecological coastal city with high-tech industry as the mainstay. The "ecology and health" aspect of urban green space was emphasised as an important principle for green space planning. "Health does not only mean human health, but also means health of the large natural ecosystem" (*Urban Green System*, 2002). With a goal of strengthening the urban ecosystem, many aspects of ecological values are considered in the overall green structure plan. Natural condition and geographic structure are amongst the basic factors that the green structure needs to respect. Two types of green space are especially planned for their ecological values: protection green space and 'ecological landscape control' green space. Protection green space is defined in the Classification of urban green space (see Annex 5. Table A5.2). 'Ecological landscape green space' is not defined in the Classification. According the information in the plan, it may belong to 'other green space' in the Classification. In addition, the ecological function is considered in plans for public green space, roadside green space and planting design. Table 5.3.2 presents the main discourse on ecological aspects in the plans.

Table 5.3.2. *Discourse on ecological aspects of urban green space in planning documents.*
Sources: *Master Plan of* (2005); *Urban Green System* (2002).

Ecological aspects	**Master Plan of 2004**	**Urban Green Space System Plan of 2002**
Goals / Principles	Environmental quality; Conservation and protection of natural landscape and man-made green space.	Environmental quality; Preserve and optimize the good ecological environment; Ecological and health principle for green space planning; Improve public awareness of ecology.
Instruments / tools	Zoning landscape / application of different strategies according to the values of green space categories (e.g. stricter protection standards for spaces with high ecological values); Define construction prohibition areas—mountains-woodlands, water resources, coastline; Suggest green-blue corridor and visual landscape corridor; Define types of "ecological green space"—farmland, mountains, woodlands, recreational green spaces and wetlands.	Constructing a complex ecological green structure, based on natural condition and geographical structure; Plan protection green space (suggest standard widths of various types of protection green space; multi-layered planting structure with trees as the main structure); Plan ecological landscape control green space (guidelines for zoning and management strategy of landscape control green space); Consider ecological function in Plan for public green space (belt public park as green corridor; natural park / Wetland park for ecological research activities, in order to cultivate public ecological aesthetics and environmental protection awareness); Road greening integrates with liner parks and protection green belts; By planting design (using native species and saving water resource).
Chapters concerning ecological aspects	Strategic Plan for Protection of Ecological Environment & Vulnerable Resource (regional); Administrative Plan for Coastline Space (regional); Plan for City and Countryside Development in Harmony (regional); Urban Green System Plan (city level); Urban Landscape Scenery Plan (city level); Tourism Resource Plan (regional).	(All at the city level) Overall Green Structure Plan; Plan for Protection Green Space; Plan for Ecological Landscape Control Green Space; Plan for Public Green Space.
Meaning of ecology / Special concepts	Clean air, beautiful environment; nature & green-blue space well-protected—they have "multi-layered greening effects and comprehensive ecological functions."	Green structure to facilitate natural process, air ventilation, to adjust temperature, to improve air quality, to protect biodiversity, to provide suitable habitat and continuous living environment for wildlife and to strengthen the overall urban ecosystem; Ecological environment is the basis for the survival and development of a city; Urban ecosystem concept.

Ecological goals and principles are emphasised in both the Master Plan of 2004 and the Urban Green System Plan of 2002. Both plans are aimed at improving the environmental quality of the city. The 2002 plan does not explain the meaning of ecology in a great detail. It emphasises protection of the natural landscape and man-made green space by using a zoning approach. The latter shows more understanding of 'ecology'. Except for the aspect of sustainable waste management by urban green space, all other criteria for ecological functions mentioned in the theoretical framework for this study were considered. The suggested instruments include both protection of the existing green space and construction of new urban green spaces with consideration of "ecological functions". However, the "ecological functions" remain at a conceptual level in the suggested instruments. Only some concrete instruments for biodiversity can be observed, for example multi-layered planting, using native species and suggesting a 12-meters width for green belts. In addition, there is also certain awareness for linkage between green spaces and respecting the natural landscape.

The planning documents show that "to improve the ecological environment" has become an obvious discourse in urban planning and urban green space planning. The concept of ecology is explained better in the context of urban green space system planning than in the general planning context. Many aspects of the ecological function of urban green space were mentioned and some instruments suggested. It seems that ecological functions of urban green space are understood at least by the planners for Weihai's urban green space system plan. It would be interesting to observe whether ecological goals also exist in urban development and urban green space development practice and to see how practitioners understand and use ecological concept.

Discourse on ecological aspects in urban green space development practice

During the interviews with key actors in Weihai's urban greening, most interviewees pointed out that "to improve the ecological environment" had been one of the objectives of urban greening in Weihai; at least ecological aspects had been considered (Er; Hu, X.Y.; Huang; Qi; Tian; Wang, Z.; Wu, pers.comms.). Officially, "to improve the ecological environment" is the most frequently mentioned objective in the public media as an argument for urban greening (Huang; Wang, Z.; Wu, pers.comms.). Some interviewees think that the ecological environment of the city is a natural outcome of urban green space development, whether it is mentioned as a goal or not (Li; Wang; Wu; Zhang, pers.comms.). The interviewed representatives of the general public did not mention ecology as an objective for urban greening (Shi; Yin; Zhang, pers.comms.).

Although the term 'ecological environment' is often related to urban greening and is a widely used discourse, few interviewees know what it

means. The interviewees who were not from the green sectors (e.g. those from tourism sector, media) could hardly explain the ecological benefits of urban green space (Er; Hu, X.Y.; Wang, X.G. pers.comms.). At most, they could relate the term ‘ecology’ to nature, green spaces as well as a clean and beautiful environment. “I could not talk much (about ecology) on this high level (…). More green space means a better environment and more ecology” (Hu, X.Y.,pers.comm.). Professionals and practitioners who deal with planning and urban green space have some further understanding of the ecological benefits of urban green space, including its importance for natural processes, biodiversity and environmental qualities (Du; Guo; Huang; Qi; Sui; Tian; Wu; Xu; Zhang; Zhao, pers.comms.).

Planners often relate ‘ecology’ with natural landscape protection: “We are trying our best to prevent the impact on these areas by urban development (…). We try to control the land use for urban development. We also try to protect farmland, mountains, woodlands and areas with water resources.”(Sui, pers.comm.). A few special plans for natural landscape protection have been made, for example the ‘Ecological Sensitive Areas Zoning Plan’ and ‘Weihai Coastline Administrative Plan’ (Du, pers.comm.). Planners in Weihai also apply a strict principle for authorizing urban construction according to which there is a prohibition on building in mountain areas higher than 60 meters above sea level and on slopes steeper than 25 degrees (Du; Sui, pers.comms.). Sticking to ecological goals, the planners who developed Weihai’s Urban Green System Plan of 2002 focused on protecting the mountains and the coastline, as well as making connections between green spaces as much as possible. “Ecology means large area greening (…). The overall, larger-scale environment such as the surrounding mountains and the sea has bigger influence on the ecological environment than the green space in the city (…). We made suggestions for protecting the surrounding environment” (Guo & Zhao, pers.comm.).

Landscape architects in both the public and private sector relate ecological benefits of urban green space to environmental quality and biodiversity. The aspects of improving air quality, wind barriers and mitigating heat island effect are mentioned. Very few landscape architects interviewed mentioned the aspect of further natural processes such as ventilation and water circulation and the importance of continuity between green spaces. In practice, ecology is often related to biodiversity and naturalness of urban green space. During the design and development of urban green space, ecological considerations included increasing green cover instead of pavement, planting more trees instead of lawns, increasing the variety of plant species, establishing multi-layered vegetation structures, and respecting the local conditions and using local species (Huang; Qi; Tian; Wu; Zhang, pers.comms.). Several interviewees mentioned that water permeable pavement has been tried in a new park (Qi; Tian; Zhang, pers.comms.). Wu

(pers.comm.) stated: “Urban green space development should be based on the principle of respecting the original natural environment. We should make use of the original environment, for example, using native vegetation to reduce the maintenance cost and pests & disease”.

Most landscape architects do not think that they have paid much attention to the ecological aspects in practice (Huang; Tian; Wu; Xu; Zhang, pers.comms.). “In general we do not consider ecological aspects enough (…).We often use big colour patterns in planting and this is not good for biodiversity (…). We should give more respect to nature, pursuing natural style and using native species and local materials (…). Green spaces have too many man-made features” (Wu; Xu; Zhang, pers.comms.). Huang (pers.comm.) said: “There are some regrets in practice, things could be done in a better way”. As mentioned by Tian (pers.comm.): “Our understanding of ecology is mainly about biodiversity. But what we are doing is mainly greening”. Wu (pers.comm.) agreed that more attention should be given to natural features and processes: “I do not think we respect the natural features enough. There are too many man-made features. We use too many exotic plant materials instead of local materials”. Focusing on natural features and processes would also have other benefits, according to Zhang (pers.comm.): “From the ecological perspective, I think that the costs of our current greening activities are too high; greening has too many man-made features. The real ecological approach is close to nature (…). We all come from the countryside. If we use native materials, we feel very familiar and friendly”.

Challenges to achieving ecological goals

Those who plan, design and manage urban green spaces think that even though ecological concepts are encouraged and there is some understandings of ecology, practical implementation is very often difficult (Lin; Tian; Xu; Zhang, pers.comms.). The challenges mentioned are provided below.

The professionals (e.g. planners and landscape architects) who favour ecological concepts have little influence on the final decisions of a project: “Technical decisions are not made by professionals, but by the leaders” (Xu, pers.comm.). Lin (pers.comm.) agreed: “I like natural green space, but if we do not add some design elements, it would not be accepted by the leaders (…). They would think that the project has no highlights.” The Chinese population density in the city makes it difficult to realize naturalness of urban parks. “With the high population density, green spaces are easily damaged if they are made ecological” (Tian, pers.comm.). The aesthetic preference of the citizens does not point to ecology. For example, “the citizens do not like natural river banks, but like meadows and pavement” (Tian, pers.comm.). “The general understanding of the public and the leaders has not developed as fast as that of the professionals. We need some time to persuade them to use our concepts. Now the city leaders are also positive in

listening to the experts. The improvement of the understanding needs some time" (Tian, pers.comm.).

Technical support for an ecological approach to green space development is limited. The challenges range from lack of technical measures, such as rain water management techniques, to lack of materials, for example, native plant materials in the nursery (Tian; Wu; Xu, pers.comms.). According to Tian (pers.comm.), technical support has not developed sufficiently with improved understanding of ecology. For example, landscape architects have realized the problem with artificial river banks and want to create natural river banks. However, as many technical difficulties are involved in managing the drainage and water level, very often the river bottom and river bank are still made artificial and vegetation is added afterward; this is an easy solution (Tian, pers.comm.). A green space practitioner also mentioned that "(t)here are many suitable ground-cover plants in the nearby mountains, which can be introduced in the city. But nobody does the basic work" (Wu, pers.comm.).

Time and budget for an ecological approach to green space development are also limited in practice. Xu (pers.comm.) mentioned: "Our concept for urban green space development is also too short-sighted. (…) The effect of development is expected to be seen as soon as possible". Regarding financing, Tian (pers.comm.) stated: "Ecological green space development may cost more money in the early stage, but the maintenance later on is normally easy and cheap. The challenge is mainly the lack of investment in the early stage. The costs of new technology and material are still higher than the normal ones."

GOALS AND INSTRUMENTS FOR STRUCTURAL FUNCTIONS

Discourse on structural functions in the plans

Weihai's natural landscape was first mentioned as an important structural component for the scenic character of the city in the draft Master Plan of 1989 (*Master Plan of*, 2005). The structural value of Weihai's natural landscape became more obvious in the Master Plan 1994, where large mountains were used as metaphoric "green cores" for shaping the urban form. The plan outlined several tracts of green space along the coastline for touristic use, but the coastline had not been identified as a coherent structural element for green space development (*Master Plan of*, 1994). In the Master Plan of 2004, urban green space has become a strong structural element of the city. The plan summarizes the development of the urban structure as "one line (coastline), multi-cores (mountains), multi-urban components." The coastline and all sizes of mountains and hills are emphasised as important structural elements for urban development. Based mainly on the natural "mountain and sea pattern", the plan suggests actively creating green buffer belts and green spaces along rivers and coastlines for controlling

urban sprawl and for guiding urban development. The plan also proposes an integrated regional green network and an integrated green-blue network through both physical and visual connections.

In the Urban Green System Plan 2002, urban form and the urban green space system directly influence one another. To respect the surrounding landscape and make use of it is suggested as one of the important strategies for Weihai's overall green structure plan (see Figure 5.3.4). Five green wedges in the green structure are to link the mountains and the sea. When planning different types of green spaces, each should be maximally linked with the other types in the surrounding area. For example, institutional green spaces should be integrated into the neighbouring roadside parks, roadside green spaces or roadside protection green space. In the Landscape Scenery Control Plan, both spatial and visual relationships among the natural and cultural structure of the city are tackled. A 'green line' is suggested as the border line of the planned integrated green space system. "Similar to the 'red line' for building structures, the 'green line' would have legal power in urban construction" (*Urban Green System*, 2002).

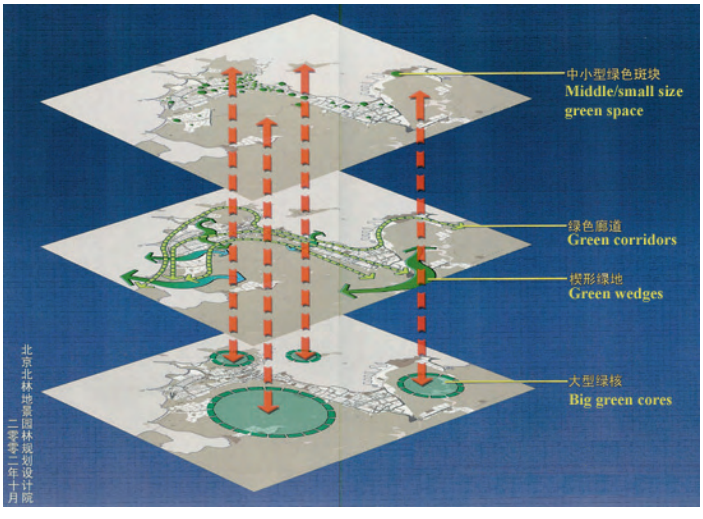


Figure 5.3.4. *Urban Green (Space) System Plan – Urban Green Structure Analysis Map.*
Source: *Urban Green System* (2002).

Table 5.3.2. *Discourse on structural aspects of urban green space in planning documents.*
Sources: *Master Plan of* (2005); *Urban Green System* (2002).

Structural aspects	**Master Plan of 2004**	**Urban Green System Plan of 2002**
Goals / Principles	"Constructing urban green space should consider the city growth mode and take an active role in making separations between urban components, as well as in controlling urban sprawl"; integrate city and countryside	Urban green structure secures the optimum mode of urban development / urban form; control urban sprawl; to improve the status of green space in planning and urban development.
Instruments / tools	Coastline and mountain kernels as structural elements of the city; green buffer belts between main urban zones and the surrounding areas to control urban sprawl; a green structure vision: "a green corridor along the coast; many green cores within the city; road green belts intersecting with one another; urban parks well distributed; green wedges extending into the city; river and water system interconnected"; define themes, functions and strategies for different stretches of coastline and different types of hills. For example, categorize mountain kernels into three types: sea vista green cores, urban park green cores and controlling land use green cores.	Green structure based on mainly natural landscape; overall green space system—a comprehensive green ecological structure, with 3 green corridors, 4 green cores, 5 green wedges separating the built up areas, and main parks evenly distributed; linkage between different types of green space; development of spatial and visual relationship between natural and cultural structure; 'green line'.
Chapters concerning structural aspects	Regional Urban System Plan (Regional) Urban Green System Plan (City level) Urban Landscape Scenery Plan (City level)	Overall Green Structure Plan; Landscape Scenery control plan; Plan for Institutional Green Space; Plan for Road Greening; Suggestion for the Implementation of the Plan
Meaning of structure / Special concepts	'Structure' as a term is not used. But the plan emphasises the value of natural landscape and man-made green space for shaping urban form. It emphasis both physical and visual relationships between green spaces.	

Both the Master Plan of 2004 and Urban Green System Plan of 2002 show that urban green spaces have a strong structural value in shaping urban form and controlling urban development. Both plans include goals for improving the spatial relationships between the urban green spaces and the surrounding

landscape. The Master Plan suggests developing green belts and green wedges mainly for separating urban zones and controlling urban development. The Urban Green System Plan focuses more on coherence within the green structure and with the natural landscape. Therefore, more instruments for making linkages between green spaces are suggested. The Urban Green System Plan intends to promote the status of the green structure in planning and urban development. It was suggested for use together with the city plan for control of urban development. The suggestions for a 'green line' could help in implementing the green structure. However, in order to determine the actual role of green structure in urban planning and urban development, further analysis based on other sources is necessary (see Table 5.3.2).

Discourse on structural functions in urban green space development practice

The interviews showed that the local city planners in Weihai have a strong concept of natural landscape and urban green space use to structure urban development. According to Du (pers.comm.): "We have recently made an 'Ecological Sensitive Areas Zoning Plan', where we used a 'reverse planning' approach — instead of planning the land use for development first, we started to plan the land use not for development in order to control the impact of urban development on the ecologically sensitive areas" (Du, pers.comm.). Sui (pers.comm.) mentioned: "Weihai city will be developed into 'an ecological city with some urban components (*zu tuan shi shengtai chengshi*)'. Highways will make links between the urban components, while natural and man-made green spaces will separate between them. There is not much consideration given to the connection between green spaces of different components. Several man-made green corridors will connect the green mountain cores and the sea. Urban green space is very important for shaping the expected urban form of Weihai". The external planners (landscape architects) for Weihai's Urban Green System Plan of 2002 admitted that they did not pay much attention to the structural aspects when they made the plan for Weihai. However, they are gradually realizing the importance of the structural function of green space for urban development and of applying this concept to the urban green space system plan elsewhere, for example, Beijing (Guo & Zhao, pers.comm.).

The planners in Weihai indicated that they are trying to realize the structural function of urban green space in their planning practice. "In the process of urban development, we try to use urban green space to organize this development; we use green wedges and green belts to separate between urban components. Within each urban component, we use building density as a control — buildings should be no more than 33%, one third of the land use is for roads and parking and one third for green spaces, and public green

spaces should be no less than 12 square meters per capita. We use a 'green line' to control road green space" (Sui, pers.comm.). The general principle is respecting the natural landscape, protecting the mountains and using the 'green line' to secure green corridors along the roads and the rivers. There is a prohibition on any urban development in areas higher than 60 metres and with a slope angle of more than 20%. These principles are used for both making the plans and approving urban constructions (Du; Sui, pers.comms.). According to Mr. Sui, the director of Weihai's Planning Bureau, a 1000-meter-wide green corridor was planned as early as 1987 to make the link between the mountains and the sea. Because of land use pressure, however, it was not implemented and land use was not reserved for the green corridor. In the Master Plan of 2004, even small hills are reserved as separators between urban components (Sui, pers.comm.).

Controling and structuring urban development are not emphasised goals in urban green space development practice in Weihai. However, there are considerations that urban green space development should respect the natural landscape. In the interviews, landscape architects and representatives from the tourism sector referred to the mountains and the sea as important characteristics of Weihai city (Hu, X.Y.; Huang; Qi; Tian, pers.comms.). Tian (pers.comm.) stated, for example: "In recent years, we have been focusing on developing green spaces along the coastline. The coastal area of Weihai is the most attractive for people. (…) The mountain areas are mainly subjected to control and conservation — they are the planning sector's responsibility". The practitioners of Weihai's green space development did not show concern for urban green space at the city level (Wu; Zhang, pers.comms.). However, most interviewees (both landscape architects and green space practitioners) indicated that they are not satisfied with the current green space development in relation to the natural landscape. "There are too many man-made elements in the coastal parks. (…) They have bad taste in flaunting too many 'high-class' materials. (…) Tunnels are developed through mountains. (…) It should be more natural." (Qi, pers.comm.). The ordinary citizens interviewed did not mention the structural benefits of urban green space. They could hardly relate urban green space with the natural landscape of Weihai (Shi & Sun; Wang, X.G.; Yin, pers.comms.).

Challenges to achieving structural function goals

For urban green space to fulfil its structural functions, land for green space must be secured. The planners in Weihai said that this is a challenging task (Du; Sui, pers.comms.). "The city leaders and the planners have improved their understanding of the importance of urban green space, but for economic benefits, the governments at the local level strongly argues for using land for development. We face big pressure everyday. (…) Arguing

for land use for development is a general issue in Weihai; even the legally binding city plan cannot control this, not to mention the urban green space system plan which has a weaker status. (…) I think city planning has been updated in terms of the technical aspects, but it is hard to grasp it as a public policy. (…) It does not have enough legal power" (Du, pers.comm.).

As a positive instrument for realizing the urban green structure, the 'Green Line Administrative Regulation' also meets challenges in implementation. "We can only control from a general level. We do not have a concrete map for the green line, nor do we have a concrete map for the status and development of urban green space. (…) To control many interesting places we need to define a strict border line. This kind of work belongs to the Park Administration, but they have been busy with green space construction during recent years and, actually, nobody does this work. The planning sector can only be based on people's conscience and professionalism. (…) The 'green line' should be controlled by the City Construction Committee, but we (City Planning Bureau) actually have the power to control. (…) The implementation of the 'green line' is actually reduced mainly to road green space control" (Du, pers.comm.).

The landscape architects then face a challenge in that both the scale of their work and their power in decision-making are not in relation to the scale of the green structure. "Although we have a mind map of the planned green structure, most green projects we are doing are at a small scale and cannot be considered at the green structure scale. (…) Green space development is decided upon and assigned by the authorities, instead of following the green space system plan." (Wang, Z., pers.comm.). Also according to Wang, Z. (pers.comm.), when designing the courtyard for the city's conference centre, landscape architects also designed a 1000-meter-wide green corridor between the mountains and the sea (as mentioned earlier). However, the implementation of the green corridor was postponed over and over again. Related to this, the use of greening budget mainly for 'image projects' is often mentioned as a challenge for developing other types of green spaces (Huang; Wang, Z., pers.comms.). "It is difficult to discuss green structure planning. (…) The 'number one man' decides everything, and everything is about projects that enhance his political status. (…) Of course this should not exclude perspectives for the benefit of the citizens" (Qi, pers.comm.).

The low status and capacity of the Park Administration is also mentioned as a challenge in implementing the city's green structure. "In order to realize the green structure, the control of the mountain areas should be considered. (…) But this is the planning sector's responsibility. The park sector does not have the power to decide on many projects, for example, some new roads and tunnels go through the mountains. The park sector can only try its best to recover the damaged vegetation. (…); often it is an impossible task" (Tian, pers.comm.). According to the director of Park Administration, "the park

sector has no way to control the overall structure. (…) We use most energy to respond to the tasks of green space development" (Qi, pers.comm.). The independent green space practitioners indicate that they do not know the green system plan and have little influence on the green strategy at the city level (Wu; Zhang, pers.comms.).

GOALS AND INSTRUMENTS FOR SOCIAL BENEFITS

Discourse on social benefits in the plans

The Master Plan of 1994 included two sectoral plans - the Plan for Greening and Coastline and the Plan for Building Heights and Scenery - where visual aspects, cultural values of natural landscape and green spaces and their relationships with buildings were considered (*Master Plan of*, 1994). The Master Plan of 2004 mentions a full range of social goals, including presenting local culture, underlining characteristics of the urban landscape and constructing a harmonious society and a city suitable for living in. Urban green spaces are used in the plan to achieve these goals. For example, the Plan emphasises maintaining public access to the coast for recreational benefit. The sectoral plan (the Urban Green System Plan) suggests the main recreational activities for existing and planned parks; it also stresses that residential green space should support citizens' socializing activities and that an attempt should be made to open institutional green space to the public and to integrate it into the wider social environment. The Urban Landscape Scenery Plan, another sectoral plan, emphasises the principles of creating city image, respecting human needs and conserving local culture. It identifies landscape, historical and cultural characteristics for the coastline and mountain areas, followed by suggestions for architectural styles, landscape and cultural identities and their applications (*Master Plan of*, 2005) (see Table 5.3.3).

The Urban Green System Plan of 2002 aims at promoting the social benefits of urban green spaces, including improving the image of the city, visual effect of the cityscape, citizens' living environment, promoting a healthy life style and representing local history and culture. In the Plan for Public Green Space, recreational use is considered the main function. The suggested recreational activities include relaxed tours, camping, socializing, exercises, eco-tourism, and a cultural/historical/ecological/high-tech experience through recreation. Among these, exercise and socializing are most often mentioned. The plan also suggests that parks are to provide space and facilities for exercises. A sport theme park is suggested for hosting popular sports. The accessibility aspect of public green space is emphasized. For example, based on a provincial criterion that urban dwellers should reach public green space within a maximum 500 meters, the Plan for Public Green Space uses 600 meter and 500 meter catchments areas to plan public parks. The Plan for Residential Green Space emphasises that considering

social-cultural benefits is the key to high quality green space. Strategies include creating the identity of the living environment, promoting social life and interaction, integrating visual effects and recreational functions, and promoting a healthy life style by providing spaces and facilities for exercises. The Plan for Landscape Control and Green Space tries to achieve landscape continuity, coherence between the natural and cultural landscape and to promote local cultural identity by giving attention to urban landscape scenic points and urban landscape corridors.

In both the Master Plan of 2004 and the Urban Green System Plan of 2002, there is an obvious awareness of the social-cultural values of urban green space. In the city plan, overall goals in terms of social benefits of urban green space are mentioned and a limited number of instruments is provided to achieve these goals. The Urban Green System Plan considers a full range of social aspects, including accessibility, city identity, cultural identity, aesthetic value, recreation, sports, healthy life style and educational resources. Health benefits are not emphasised in the plan, but the attempt to promote a healthy life style through planning various activities in public green spaces reflects the awareness of physical and emotional benefits derived from urban green spaces. Among the social aspects, citizens' recreational use, sports and socializing for a healthy life style are given most attention, followed by cultural and aesthetic values and city/local identities.

Discourse on social benefits in urban green space development practice

According to the interviews, Weihai's urban green space development has obviously considered social benefits, among which contributing to city image, recreation, visual effects and cultural identity are considered as key benefits of urban green space. Most interviewees mentioned that the pursuit of the city image is the most obvious goal for urban green space development. To provide space for recreation and tourism and to highlight the local culture and local identity are other main objectives (Huang; Wang, Z., pers.comms.).

In Weihai, the point of departure for pursuit of the city image through urban green space is mainly economic benefit (see Section 5.3.5). In addition, a good city image also provides social benefits, among which, contributing to the feeling of belonging to a place and prestige are often mentioned. Most interviewees were positive about city image as a goal of green space development. Wang, X.G. (pers.comm.) stated, for example: "We are happy that the city's image is improved. A beautiful environment has positive effects on our emotion, as well as on our working engagement." Wu (pers.comm.) said: "A good city image gives both the city leaders and citizens confidence when they communicate with people elsewhere". A few interviewees related city image to the leaders: "A better city image means a better image of the city's leaders. (…) Urban green space is the most visible

Table 5.3.3. *Discourse on social aspects of urban green space in planning documents.*
Sources: *Master Plan of* (2005); *Urban Green System* (2002).

Social aspects	**Master Plan of 2004**	**Urban Green Space System Plan of 2002**
Goals / Principles	Represent local culture; give prominence to characteristic urban landscape; construct harmonious society and suitable for a residential city; provide recreational environment; secure public access and recreational use of the coastline	Improve the image of the city, visual effect of the cityscape, improve citizen's living environment, promote a healthy lifestyle; embody local history and culture; meet citizens' recreational demands for outdoor green spaces; create characteristics of the living environment, promote social life and communication, a balanced distribution of public parks to improve accessibility, convenient use of the parks. Promote the overall characteristics, continuity and better inter-relationship of the urban landscapes.
Instruments / tools	Plan recreational activities for existing and planned parks; Urban landscape scenery plan: identify landscape historical and cultural characteristics for coastline and mountain areas, suggest architecture styles, landscape and cultural identity of the place, as well as the possible use of each zone.	The catchment areas of the parks to cover most of the residential areas: 600 m service radius for comprehensive parks and theme parks; 500 m service radius for belt parks; plan belt park and roadside park to provide convenience for public use; integrate visual effects and recreational functions; plan a sport theme park; suggest space and facilities for exercise in public parks; pay attention to urban landscape scenic points (buildings with historic /cultural values, mountains and important view points) and urban landscape corridors (visiting landscape corridors and visual landscape corridors).
Chapters concerning social aspects	Regional Urban System Plan (Regional) Urban Green System plan (City level) Urban Landscape Scenery Plan (City level)	Overall Green Structure Plan; Plan for Public Green Space; Plan for Residential Green Space; Plan for Landscape Control Green Space; Plan for Road-side Green Space; Plan for Disaster Alleviation Green Space.
Meaning of social aspects/ Special concepts	"A city suitable for living in": support cultural activities, a healthy lifestyle, recreational needs and a feeling of belonging to the society.	Recreation is the main function of public green space: recreation includes passive and active leisure activities; exercises, socializing: City /local identity, culture, history, aesthetics, educational functions.

feature when a city leader is evaluated. It represents his political achievement. If a city leader does not undertake any environmental improvement or municipal infrastructure construction, it seems that he does not do anything at all" (Zhang, pers.comm.).

For the city government, to provide opportunities for recreation has always been a tangible goal for urban green spaces, even though visual effects and city image are actually the foci. Most of the new green spaces developed during recent years are actually public parks with recreation as the main function (Huang; Li, pers.comms.). The professionals show a growing attention to recreational aspects. A landscape architect from the Park Administration said that "now we start to seriously consider human needs and recreational use in our design. Before, green belts were made to be viewed; we focused on the visual effect from a distance. Now we try to make the green space usable, to be enjoyed by people. Recreational needs have risen rapidly during the past couple of years. People want to be more involved in the environment. Our concept for planning and design is also changing, from serving sightseeing tourism (visiting scenic spots) to serving leisure tourism (being involved in leisure activities)" (Tian, pers.comm.).

The recreational value of green space becomes more important for local government and normal citizens. Planners of both special zones in Weihai, the Economy & Technology Development Zone and the High-tech Zone, pointed out the need to provide recreational opportunities to fulfil the local citizens' demands as one of the most important reasons to develop green space (Lin; Sun & Liu, pers.comms.). A journalist said that "the main focus and debates in our newspaper are around recreational benefits of urban green space in citizens' everyday life. Personally I think that the focus of urban greening should be on citizens' quality of life. Greening does not exclude personal interest, for example, the success of one's career, but the basic goal of politics is to serve the people." (Er, pers. comm.). The citizens interviewed mentioned that there is not enough effort on green spaces in their neighbourhoods. Even though the urban green spaces have improved city image, people's immediate living environment is still not very good (Er, Hu, X.Y.; Huang; Tian; Wang, pers.comms.).

A few landscape architects mentioned that the cultural dimension of urban green space has also been considered (Qi; Huang; Tian; Wang, Z., pers.comms.). The coastal parks try to highlight ocean culture through the themes of the sculptures in the park (Wang, Z., pers.comm.). It was also suggested by local landscape architects that the local seagrass houses be widely used as an architectural style in the urban parks (Qi, pers.comm.). A local planner emphasised the importance of respecting the Chinese garden tradition in urban green space development: "Because of the garden tradition in China, citizens of Weihai love stones, pavilions, sculptures and water elements in urban green spaces. Even though Weihai's urban greening

approach has increasingly adopted the concept of making use of nature, the Chinese people's preference for man-made landscape should be respected" (Sui, pers.comm.).

Challenges for achieving social goals

Within the group of professionals, there have been debates about taking visual effects as the obvious focus of urban green space development in Weihai. When asked whether they can recognise their planning concepts in the existing developed parks in the city, the planners for Weihai's green space system plan thought that the parks focus too much on visual effect and not enough on ecology. "It seems that it is built by money. The plan can just define the land use and suggest the general content of the park. The locals decide what kind of green space it will be. The city leaders are more concerned with achieving the 'garden city' criteria. The citizens are happy with any urban green space. The parks actually met the demands" (Guo & Zhao, pers.comm.). Moreover, there seems a general understanding (especially amongst city leaders) that urban green space should include many design elements, and a green project proposal needs to provide some visual highlights in order to be approved by the leaders (Guo & Zhao; Huang; Lin, pers.comms.). "When we develop urban green space, if we only plant trees, the others will think that we have not done a good job." (Guo & Zhao, pers.comm.). Some professionals also mentioned that the Chinese garden tradition has greatly influenced citizens' preferences for visual effects in urban green spaces (see also the section on ecology and culture).

There has also been criticism from both professionals and citizens on the so-called 'face projects' or 'image projects', which are closely related to city leaders' careers (Huang; Qi; Wang, Z., pers.comms.). The professionals' concern is that the city government puts too much emphasis on 'image projects' and does not give sufficient attention to other types of green space, such as protection green space, surrounding mountain areas and residential green space. The citizens' concern is that many resources are wasted on 'face projects' because of their frequent redevelopment and use of expensive materials (Shi & Sun, pers.comm.). However, "this problem is related to the Chinese political system – the leaders decide everything. The better remarks they get, the better it is for their political career. The government is searching for a solution, but the problem possibly cannot be solved if the political system does not change." (Shi & Sun, per.comm.).

Lack of management of and control over the development and maintenance of green spaces that are not public is another challenge for achieving the social benefits of green space. The city can only control the quality of the public green spaces. Management of private green spaces is gradually changing from government management to being led by market mechanisms. As a result, the management and maintenance of other green

spaces, for example the market-oriented residential areas, is becoming 'loose' (Er; Huang; Wang, Z.; Tian, pers.comms.). "In proposals for residential areas, the green percentage is over 35%, but nobody can control the change in land use later on. The green space can be partly changed into pavement. Moreover, there is not enough control of the quality of the green space within this 35%. In addition, many of the proposals are not even made by qualified professionals" (Tian, pers.comm.). Huang (pers.comm.) stated: "We intend to fulfil the greening rate and the quality of vegetation when we make the design, but the developers do not follow this when constructing the green space. For immediate economic benefits, they intend to reduce the green area or reduce the amount of planting material. The supervision system for construction and development is not mature enough. Even though the Park Administration, Planning Bureau and Construction Committee participate in approving development projects, it is normally difficult to deny a project only because of green space considerations." There are many conflicts between citizens and the property management companies because of the low maintenance of residential green space (Er, pers.comm.).

GOALS AND INSTRUMENTS FOR ECONOMIC BENEFITS

Discourse on economic benefits in the plans

The economic benefits of urban green space in Weihai can be examined from the perspective of the tourism industry. This industry has been emphasised since the Master Plan of 1989 (*Master Plan of*, 2005). The Master Plan of 1994 included a simple coastline plan, which mainly focused on the coast's values for tourism (*Master Plan of*, 1994). In the Master Plan of 2004, tourism was identified as one of the main industries of the city. Even though the economic values of green space are not often mentioned, several sectoral plans relate the green and blue resources of the city to tourism development. The Master Plan of 2004 also makes it clear that improving the image of the city, for example, as a 'tourism city', 'city suitable for living in' and 'garden city', will after all attract resources and improve the city's overall economic development (*Master Plan of*, 2005).

Economic aspects of urban green space were considered in the Urban Green System Plan of 2002. The Plan suggests that "green structure development contributes to the construction of an ecological coastal city, and will enhance the overall promotion of social and economic development of the city (…). The market economy is, in turn, an important force that influences how urban green spaces are developed". The Plan also encourages consideration of economic efficiency when locating different types of green space and bringing market economics into the maintenance of green space. For example, there is encouragement for transformation of nursery supply from governmental to market-based with some subsidies from the government. This is seen to benefit both plant supply and farmers' income.

The Plan also suggests various measures for efficiently raising and using budgets for urban green spaces development. For example, it suggests distributing more funding for 'important projects' as leading models and reserving other green spaces for future development when funding becomes available. The government should increase the budget percentage for urban greening, whilst at the same time keeping it at a suitable level in accord with urban development; "by encouraging public enthusiasm, the budget for urban green space development could be raised from various channels in the society" (*Urban Green System*, 2002).

Table 5.3.4. *Discourse on economic aspects of urban green space in planning documents.*
Sources: *Master Plan of* (2005); *Urban Green System* (2002).

Economic aspects	**Master Plan of 2004**	**Urban Green System Plan of 2002**
Goals / Principles	Promote overall economic development; promote tourism industry.	Promote overall economic development; green space planning and management adapt to market economy; develop tourism industry; developing "green economy".
Instruments / tools	Zoning and applying strategies for tourism development; branding the city with titles of "tourism city", "city suitable for living in", "garden city" and so on.	Locate protection green space in suburbs to ensure better economic efficiency of overall land use; nursery management changes from public sector to private sectors with market oriented management; promote tourism industry by protecting and utilizing coastline, wetlands, mountains and forest; "fisherman culture" tourism village; management and maintenance of public green space through competition in the open market.
Chapters concerning economic aspects	Administrative plan for coastline space (regional); Urban green space system plan (city level); Urban landscape scenery plan (city level); Tourism resource plan (regional).	(All at the city level) Overall green structure plan; Plan for protection of green space; Plan for ecological landscape control of green space; Plan for short-term development of green space; Plan for implementation.
Meaning of economic benefits / Special concepts	Overall economic development; economic benefits through tourism industry.	Overall economic development; "green economy": economic benefits through tourism industry.

There is an awareness of the economic benefits of urban green space. In general, urban green space will promote the overall economic development of the city. In the Master Plan of 2004, except for the direct economic

benefit through the tourism industry and branding the city with a green image, there is very little explanation about the correlation between urban green space development and the city's economic development. The Urban Green System Plan of 2002 provides more instruments and better explains the relationship between green space and economic benefits. The economic aspects mentioned are production, and general income generating activities, green space related to tourism, and urban greening as an economic activity in its own right. Economic benefits proposed in western urban green space planning theories, but not mentioned in the plans for Weihai, are employment related to urban green space, urban green space related to investment, fund raising capacities, and green space related to housing (see Table 5.3.4).

Discourse on economic benefits in urban green space development practice
From a city perspective, according to the professionals, promotion of economic development is the ultimate goal of urban greening, and it is often achieved through improving the city image (Du; Huang; Wang, Z., pers.comms.). Most of interviewees said that the city government has put 'city image' at the first place among the various goals of urban green space development (Er; Li; Hu, X.Y.; Huang; Qi; Shi & Sun; Tian; Wang, Z.; Wu; Xu; Zhang, pers.comms.). "Located between several big neighbouring cities, Weihai's development relies on its environment to be outstanding amongst Chinese cities. A good city image in the long run will promote the overall economic and social development of a city. There are many examples of other cities showing that the improvement of the urban environment will attract resources and will promote the economic development of a city" (Du, pers.comm.). City image is directly related to the green city and sustainable city awards granted to Weihai during recent years. The awards all contribute to improving the city's fame among other cities (Wang, Z., pers.comm.). As Qi (pers.comm.) said: "Creating a good city image is about creating a brand for the city, as well as a brand for tourism, which will finally promote the economic development."

Therefore, creating a green city image becomes the main goal for urban green space development, which will indirectly promote economic growth in Weihai. The goal of improving city image is mainly achieved through some public green space developments, which the interviewees called 'face projects' or 'image projects'. The landscape architects and practitioners indicated that provision of good visual effects has been a strong focus of green space development (Li; Lin; Huang; Tian; Wang, Z., pers.comms.). The visual highlights include outstanding sculptures, luxurious pavements, specially designed water elements or trees with a nice shape and showy flowers. "Before, urban greening was functionality first, then economical and beautiful if possible; now the principle is beauty first, then functionality"

(Huang, pers.comm.). Most professionals think that green space should look good. However, the concepts of beauty vary between people and change over time. During recent years, 'nature' has been promoted in public parks. Most of the professionals think that urban green space development may be done closer to nature and with a limit to artificial elements (Du; Lin; Huang; Qi; Tian; Wu; Zhang, pers.comms.). Many professionals, including some of those who like a more natural style, emphasised that some man-made elements, for example sculptures, are also necessary for providing visual effects (Li; Huang; Sui; Wang, Z.; Zhang, pers.comms.).

For the sub-municipal governments and private developers, the pursuit of economic benefits is a more direct impetus for green space development than at the municipal level. In the two special zones of the city, the greening strategy is to green the larger environment first in order to attract investment and to promote the overall development of the new area. Subsequently, investors are responsible for greening inside each piece of land (Lin; Sun & Liu, pers.comms.). "The improvement of green spaces has apparently brought economic benefit. (…) The rising value of the surrounding properties could also attract investment" (Lin, pers.comm.). Some local governments try to develop local parks or scenic places in the hope that these will become tourism centres and bring income through tourism (...). Even private enterprises have started to develop tourism villages within their territory (...). The real estate developers also show increasing interest in improving the quality of the green space in their housing developments in order to obtain a high housing price (...).

Challenges for achieving economic goals

There is a consensus among the interviewees (officials, professionals and citizens) that urban green spaces will have economic benefits in the long run. However, current conflicts were mentioned within the issues of land use pressure for urban green space. A planner reflected that a good urban environment promoting economic development of the city will materialise after the city's economy has reached a certain level. Within the current economic circumstances of Weihai, the benefit is not so visible and the planners state that they know very little about the concrete argument for economic benefit of green space (Guo & Zhao, pers.comm.).

Rather, the land use conflict between urban development and the need to protect the ecological environment (including urban green spaces) of the city is very strong. Urban greening costs money and real estate development makes money. In this situation, only government support will secure the urban greening process (Sui, pers.comm.). Landscape architects observed that, for short-term economic benefits, green space is not always prioritized by the developers of commercial housing areas. During the construction process, some of the land used for green space can be changed to other uses.

There is also a tendency towards reducing the amount of plant materials. However, there is not yet a good mechanism to control this process (Huang; Wang, Z., pers.comms.).

When talking with the interviewees about the economic functions of urban green space, another economic aspect was mentioned quite frequently. That is the funding of urban green space development. Many interviewees considered the intensive use of large amounts of money for expensive materials and frequent redevelopment of the 'face' of the city as not being economically efficient. Huang (pers.comm.) said regarding this matter: "Weihai already has a good foundation along the coast. Now there are some new redevelopments of the coastal park. For example, the expansion of the former Haibin Park will be both expensive and affect the ecosystem of the bay. Actually it is better and more economical to put effort into other areas." (Huang, pers.comm.). Shi & Sun (pers.comm.) mentions: "From the citizens' perspective, there are more urgent needs to be solved".

The private or semi-private enterprise owners complain about the often delayed payments of fees for their work (Wang, Z.; Wu; Xu, G.Y.; Zhang, pers.comms.). According to them, the government and city leaders' support of urban green space development does not secure an adequate budget. Normally, the lower the level of government concerned, the more difficult is its budget situation. However, based on the credibility of government, green space could be developed even without a budget. For example, the government could borrow materials from other enterprises to develop green space, and then pay the enterprises back little by little (Wang, Z., pers.comm.). Projects could be implemented by private enterprises. Governments have debts to private enterprises, and private enterprises owe to each other. The final debts are borne by the employees. Small enterprises cannot survive in this situation. So the government prefers to use a big enterprise rather than many small ones in order to keep things simple" (Zhang, pers.comm.). "Money is often delayed during the construction process. Now the government demands that the enterprises should not owe salary to its workers. The enterprises, and especially small enterprises, face economic difficulties. It is not really necessary to develop with such a high speed. Society cannot sustain this fast development" (Xu, G.Y., pers.comm.). Wu (pers.comm.) added: "Construction payments are not settled on time. In good cases, we can get 30-40% of the payment when the construction is finished. (…) Although we know that the payment will be delayed, we still have to do the project (because of competition in the market)".

SUMMARY

Urban greening has becoming more influential within the overall urban development of Weihai. The overall planning concept for urban greening has gradually matured. To promote economic development, to gain prestige

among other Chinese cities and to benefit the city leaders' career aspirations are the most influential driving forces for Weihai's urban greening process.

"To improve the ecological environment" is one of the major discourses for Weihai's urban greening, both in statutory green space planning and green space development practice. However, in the plans, the 'ecological functions' remain at a conceptual level. Only limited concrete instruments could be identified in the analysis. In practice, ecology is mainly used in a rhetorical way, and few people know its meaning and applications. The ecological approach is often linked with natural landscape / man-made green space protection, a natural way of green space development and with planting design for biodiversity, for example, increasing the variety of plant materials, using native species and multi-layer vegetation. Even these basic principles are difficult to realize in practice. Technical decisions are not made by professionals who favour ecological concepts, but by the political leaders. Technical support, time and funds for an ecological approach to green space development are also limited.

In the plans, urban green space planning is given an important structural role in shaping urban form and controlling urban development. Based on natural landscape and man-made green space, urban green structure is planned by, for example, mountain kernels, coastal green-blue corridors, green wedges between urban components and road green corridors. A 'green line' has been proposed as a boundary for the planned, integrated green space system. In practice, the pressure on land and the lack of maps with the green line and the existing situation make it difficult for planners to promote the structural function of green space. The implementation of the 'green line' is actually reduced mainly to road green space control. Structural values are not much considered in green space development practice due to the limited role of the green sectors and their small scale of tasks. Projects are decided upon and assigned by the authorities, instead of following the Urban Green System Plan. The low status and capacity of the Park Administration was also mentioned as a challenge to implementing the proposed green structure.

The plans consider a full range of social values of urban green space, among which citizens' recreational use, sports and socialization for a healthy lifestyle gained most attention, followed by cultural and aesthetic values and city/local identities. In practice, at the city level, the goals for social benefits are undermined by those for improving city image and prestige. They are achieved mainly through 'image projects' by focusing more on the visual effects and less on recreational use. The cultural dimension of urban green space has also been considered, for example through theme sculptures and architecture style. For the local governments, recreational functions rank among the most important reasons for green space. Many professionals considered that the present parks have too much focus on visual effects and not enough on ecology. However, the challenge is that visual effects are

preferred by the city leaders. Lack of management and control of the development and maintenance of non-public green spaces is another challenge to promoting green space qualities for social benefit.

According to the plans, urban greening is an integral part of Weihai's overall approach to economic development. The tourism industry and branding the city through a green image are the main instruments. Other issues were also mentioned, such as effectively arranging the locations of different types of green space and activities to create income for further urban greening. However, in general, consideration of economic aspects of urban green space is limited. In practice, even though 'to promote the economic development' is the ultimate goal of urban greening, the focus of green space developments by the city government is actually on improving the city image through visual effects. For local governments and private developers, economic benefits are a more direct impetus for green space, for example in the form of benefits related to attracting investment, green tourism or raising housing prices. There is a consensus in Weihai about the long term economic benefits of urban greening. However, many conflicts exist, for example in terms of land pressure for urban green versus other land uses for short-term economic benefit, the inefficient use of available budget, and the often postponed payment of fees by the government.

The investigation of Weihai's urban greening discourse shows that there is a gap between the statutory planning and the practice of urban greening. Plans emphasise the ecological, structural and recreational functions, while urban greening practice prioritizes city image and prestige, visual effects and short-term economic benefits. In the process of implementing the plans, the concept of developing and managing the overall green structure from a city's perspective is implemented through the development of some 'image projects' along the coast. City leaders play an important role in the urban greening process, which on the one hand promotes greening, while on the other hand, it hampers professional's judgement, the statutory plans and the economic cycle. Techniques and knowledge needed for a multifunctional urban green structure are not always shared among sectors. There are different understandings and preferences related to the values and functions of urban green space. The public has little influence on the greening of Weihai. It seems that communication, cooperation and involvement among the actors are lacking in the urban green space planning and development process. The next section will explore the role and interaction of actors, as well as procedural aspects of urban greening in Weihai.

5.4 Main actors and process of urban green space planning and development

In Weihai, urban green space planning and development involve an extensive network of actors. Interaction of these various actors leads to a complex process of urban green space planning and development. This section provides insight into the main actors and processes. First, the main actors in urban green space planning and development are introduced. Second, the process for urban green space planning and development is analysed. Third, the interaction and communication between the actors during urban green space planning and development process are presented. A summary of key findings concludes this section.

ACTORS IN URBAN GREEN SPACE PLANNING AND DEVELOPMENT

Urban green space planning and development in Weihai involve public, private and semi-public actors. Within the group of public actors, the government and administrations at the city level play the most important roles in the overall urban green space planning, management and development process. The local (i.e. below city level) governments and administrations also play active roles, but mainly in the management and development of local green spaces. At both city and local level, political actors are highly involved in the green space planning and development process. Within semi-public and private sectors, a growing numbers of institutions, enterprises and real-estate developers have interests in greening their own areas, and therefore initiate greening processes. Through competition and tendering systems, both semi-public and private firms are involved in planning, design, construction and maintenance of green space. Academics and experts in relevant fields are also involved in planning and development processes at both city and local levels. The involvement of citizens, non-governmental organizations and interest groups is limited in Weihai, at least to this point in time. Finally, the media play a marginal role in greening processes. Table 5.4.1 shows these main actors.

Main public actors and their roles

At the city level, the main government organizations and public actors relevant for planning and development of urban green space are the City Government and the top leaders (the General-Secretary of the Communist party and the Mayor), Planning Committee, Construction Committee, Planning Bureau, Park Administration (until August 2006), Forestry Bureau, Greening Committee and the Administrations of the two new Zones. Table 5.4.2 gives brief information on these main public actors and their roles in urban green space planning and development of Weihai. More information on these actors can be found in Annex 7. The Park Administration has been

through a restructuring process and no longer exists after dissolution in August 2006. Since it had a major influence on greening issues during the study period, it is included here as a main actor. The Administrative Committees of the Weihai High-tech Zone and Economic Development Zone are extensions of Weihai City Council and have a city-level status in the political hierarchy. Both Administrative Committees have relevant departments dealing with urban greening at a more local level. Since both zones occupy a large share of the urban area and act more independently in the urban greening process, they have considerable influence on urban greening at the city level. Figure 5.4.1 shows the hierarchy and relations of these actors.

Table 5.4.1. *Actors in urban green space planning and development in Weihai.*

Public actors	**Semi-public and private actors**
City level • Weihai City Government • (City Council & City Committee) and Politicians • Weihai Construction Committee • Weihai City Planning Committee • Weihai City Planning Bureau • Weihai City Park Administration • Weihai City Forestry Bureau • Waihai Greening Committee *Local level* • Governments, politicians and administrations of Weihai High-tech Zone and Weihai Economic Development Zone • Government, politicians and administrations of Huancui Districts, • Government, politicians and administrations of Towns or Villages	• Institutions and enterprises • Real-estate developers • Public planning, design and construction institutes • Semi-public planning, design and construction consultants • Private planning, design and construction consultants • Academics and experts in relevant fields • NGOs and interest groups • Citizens • Media

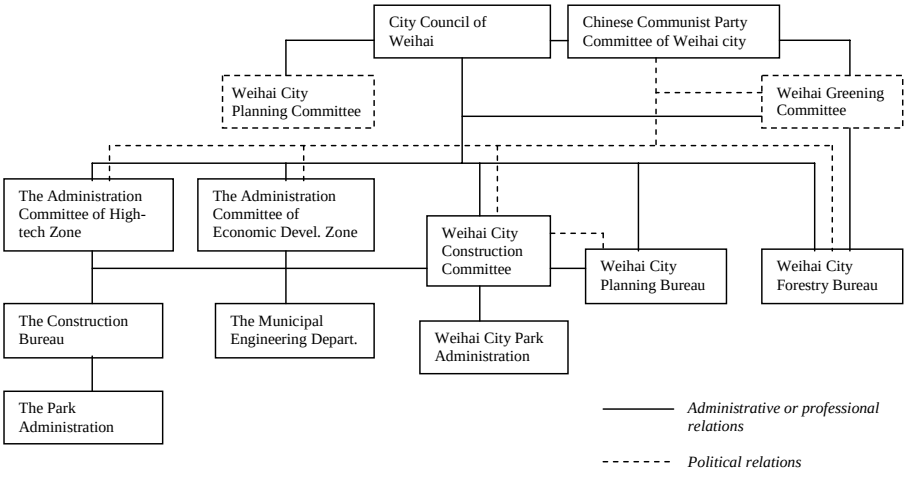


Figure 5.4.1. *Main government organizations involved in Weihai's urban green space planning and development.*

Table 5.4.2. *Main public actors and their roles in urban green space planning and development of Weihai. (Continued on next page).*
Sources: *Arrangement opinions for* (2004); Forestry Bureau (2006); *Organization of the* (2007); Cai; Du; Huang; Li; Lin; Liu & Sun; Qi; Sui; Wang; Z. (pers.comms.); Personal observations (2004 & 2006).

Actors	Main functions
City Council of Weihai & Chinese Communist Party Committee of Weihai city *(the City Committee)*	Play the leading role in overall urban greening. The City Council: approves sectoral plans and important urban development projects. The City Committee: exerts political power over almost all decision-making processes. The General-Secretary of the City Committee ('the number one man' of the city) plays an influential role in promoting and securing the key projects of the city.
City Construction Committee of Weihai	A functional body of the City Council; plays a central role in urban green space planning and development of Weihai city. Coordinates, organizes, supervises and manages planning, overall urban construction, development tasks and greening activities on a city scale, e.g. applying for the 'National Garden City' title, developing key projects of the city.
City Park Administration of Weihai	A governmental department under the Construction Committee. Only responsible for the central zone of Weihai city—Huancui District. Suggests annual green projects to the Construction Committee; Manages and maintains the public green space (except for green areas on the hills) within Huancui District. Conducts greening tasks given by the Construction Committee and the city government. Prepares Urban Green System Plan of Weihai City. Actually a 'Park Company' occupied with tasks of design, construction and maintenance of green projects.

City Planning Bureau of Weihai	A functional body of the City Council; responsible for the entire city region. Plays an important role in the urban greening process. Responsible for all the statutory planning activities, e.g. verifying and coordinating all sectoral plans before further approval. Approves all development projects by evaluating the proposals according to existing plans; defines borderlines of urban construction before construction activities start.
City Planning Committee of Weihai	A decision-making, supporting body of the City Council. Includes both experts in various fields and officials from various government sectors; approves plans and important projects before official approval by the City Council.
Forestry Bureau of Weihai	A functional body of the City Council; responsible for the entire city region with sub-division departments at different levels. Responsible for the mountains, forest stations and orchards in the city region. Preserves existing forest resources, afforestation to improve the forest cover. Organized the process of application for the 'Greening Model City'.
City Greening Committee of Weihai	A coordinating organization under the National Greening Committee. Responsible for the city region. Coordinates, supervises and organizes general greening activities, including urban greening. In Weihai, its executive office is situated in the Forestry Bureau. Implements the national greening policy (e.g. 'Duty-Tree-Planting Movement').
The Administrative Committee of the High-tech Industry Development Zone *(the High-tech Zone)*	An extension of the government body of the City Council, directly under the City Council, but not under the control of any city bureaus. Has its own ***Construction Bureau*** within sub-division ***the Park Administration.*** Directly guides the urban construction and greening activities of the Zone, instead of being led by the Construction Committee and the Park Administration of the city.
The Administrative Committee of the Economic Development Zone	Similar to the Administrative Committee of the High-tech Zone. No special administration for greening issues. ***The Municipal Engineering Administration*** of the Zone is responsible for green projects.
Local governments, politicians and administrations	Local governments of the districts, towns and villages comprise a lower level of government than the city level. Local administrations are sub-divisions of the city bureaus or committees. Responds to and cooperates with the greening actions initiated by the governments and administrations at the higher levels. Initiates green actions, organizes large-scale plans, organizes local greening actions and maintains green spaces within their responsible territories.

Semi-public and private actors

There are other actors who do not have direct power over planning, development and management of public urban green space, but who do

contribute to urban green space development. Institutions, enterprises and real estate developers can initiate green space development in their own courtyards. Semi-public and private planning, design and construction firms, as well as experts and academics in the relevant fields are very active actors that directly influence the development of green spaces. Mainly representing the users of urban green space, NGOs, interest groups, the media and the public at large have so far not had a major influence on urban green space planning and development in Weihai.

Institutions and enterprises are responsible for greening their own courtyards. There are national and local criteria for the development of this type of green space. Some large institutions and enterprises occupy large tracts of land that are open to the public, such as a university campus. Greening of the institutional site then makes a major contribution to the general urban environment. Some institutions and enterprises are enthusiastic about greening. The motives for greening vary from developing a better environment for employees, a better image to attract resources to even developing tourism (Ji; Wang, M.L., pers.comms.). There are also competitions for the 'Garden Work-unit' at the city level, province level and national level, which are all part of the national strategy for promoting urban greening. Institutions and enterprises have offices or personnel that are responsible for development and maintenance. They normally invite professional planning consultants for planning, design and construction (Ji; Wang, M.L., pers.comms.).

Real estate developers play an important role in developing residential green spaces. The housing policy in Chinese cities has been changed in recent year from public provision to commercial housing. More and rapidly growing real estate companies are emerging in Weihai. Even though there are national and local regulations and criteria for residential green space, mainly set in terms of a minimum green percentage for an entire area, real estate developers still retain major flexibilities in terms of size and contents of the developed green space. Often, professional planning, design and construction firms are hired by real estate developers for development work. Their plans need to be approved by the City Planning Bureau and project construction quality needs to be examined by the Construction Committee before coming to the market. The maintenance of the developed area is normally handed to property management companies after the area is put into use (e.g. Huang; Cheng, pers.comms.).

Semi-public and private planning, design and construction firms. Before the open policy, there were no private planning, design and construction consulting firms. Only state-owned planning and design institutes existed. Some public administrations in the construction sector had their own planning and design offices. Since the open policy, consulting functions are becoming more and more independent from public

organizations. Semi-public consulting firms have been established within public organizations. They can engage in projects in the open market, and part of their income goes to their superior organization. The semi-public consulting firms are gradually being privatized. There is also a rapidly increasing number of private consulting firms. Some of these are directed by professors from universities. According to their capacity, institutes or consulting firms are qualified at different levels. The higher the level, the bigger their potential for operating in the professional market.

At this moment, all public, semi-public and private planning design and construction firms are active within green space development. The public and semi-public ones have advantages, since they seem to have higher qualifications and a better professional network. However, the tendency is that the private firms are becoming more and more important actors. Based on networks, some projects are directly assigned to private firms (e.g. Wu, pers.comm.). A growing number of projects is offered through open competitions. In Weihai, a new policy is that projects larger than 5 million RMB (equals about 0.46 million EUR) need to be offered through an open tender (Tian, pers.comm.). Even though consultant firms do not have the power to take decision, they directly influence the physical development and the decision-makers through their planning and design concepts and their professional knowledge.

Experts in research or planning / design institutes and ***academics*** at universities can be involved directly in planning and design processes. They are often involved in the process of evaluating plans or proposals. Their opinions can influence the decision-making.

NGOs and interest groups. There are not many non-governmental-organizations in Weihai, and even fewer are especially relevant in the context of urban green space development. A few NGOs often use urban green space for their activities. For example, the Weihai Photographer Association takes photographs of Weihai's cityscape, including urban green spaces. The images are often used in the city's propaganda booklets to promote the 'green' city image. There also are some interest groups involved in maintaining local green spaces. ***The general public*** is mobilized to join 'duty-tree-planting' activities. There is also another local activity called 'adopting trees', organized by the Greening Committees. Members of the public are voluntarily involved in activities to plant trees, maintain trees and 'donate money' to one or more trees. ***The media,*** for example newspapers, hold debates about urban green space issues. The media act as a 'bridge' between the green space user, the government and experts and academics. Since all media are state-owned, they are also used for propaganda about urban greening.

PROCESS OF URBAN GREEN SPACE PLANNING AND DEVELOPMENT

The green-space planning and development process is often not properly documented. However, there are signs that planning processes in Weihai are becoming more transparent. For example, the Master Plan of 2004 includes a list of main working schedules throughout the planning process. As the planning and development process is often hidden, most of the results presented in this section are based on the interviews with key actors.

In recent years, Weihai City Council has increasingly realized the importance of the Master Plan and the Controlling Plan. The active statutory planning activities have produced several official plans as output. When planning is seen as a 'social action' (see Chapter 2), it includes much broader place-shaping actions. In Weihai, the development of urban green space is directly related to many key projects of the city. There are other projects that are less important but have increasing impacts on green space development. Besides presenting the planning process for the official plans, this section will also introduce the process for key projects of the city and for less important projects. At the end of the section, the impact of official plans is discussed.

Process for developing plans

Chapter 4 (Background of urban green space planning and development in China) showed that there are national and provincial planning policies that require preparation of certain statutory plans at a city level, for example the Master Plan and Urban Green System Plan. At the national level, the City Planning Act of 1989 and relevant regulations provide guidance for the planning process and sectoral responsibilities of the statutory plans. In addition to the plans required by national and provincial planning policies, the city can also draw up its local planning regulations, policies and plans, based on the needs and circumstances of the city. In general, the process of developing statutory plans in Weihai needs to follow the guidelines set by national regulations.

In Weihai, planning tasks at the city level are assigned by the City Council through the Construction Committee. The City Planning Bureau is responsible for the preparation of most official plans at the city level. For those plans that need extensive knowledge about the green space issues, the Park Administration was responsible for preparation of the plans until its dissolution. As planning outputs, the plans prepared by the City Planning Bureau in recent years include: 'Ecologically Sensitive Area Zoning Plan', 'Weihai Coastline Administrative Plan' (these first two plans were included in the Master Plan of 2004), 'Weihai Central City General Urban Design', and 'Weihai Coastal Road Construction Control Plan'. The Park Administration prepared two plans at the city scale - the 'Urban Green System Plan of Weihai' of 2002 and the 'Road Greening Situation and

Vegetation Landscape Planning for Weihai's Urban Area (Road Greening Plan)' of 2004. Here, I use Master Plan 2004, Urban Green System Plan 2002 and Road Greening Plan 2004 as examples for presenting the planning process of statutory plans in Weihai.

The process of preparing a plan includes six stages (Table 5.4.3) (*Master Plan of*, 2005; *Road Greening Plan*, 2004; *Urban Green System*, 2002; Guo & Zhao; Huang; Xu, pers.comms.). In the 'Preparation' stage, the city assigns the planning task to a planning team from an authorized planning institute, which is made responsible for drawing up the plan. Throughout the whole process, the City Planning Bureau or Park Administration provides local data, participates in discussions, coordinates the different sectors and organizes report meetings. The 'Investigation' stage includes a public survey, basic data collection and document study, on-site visits and coordination with relevant government departments in various sectors and districts. The stage of 'Preparing / revising and reporting the draft plan' is a process of collecting various opinions through presenting the draft plan and then revising it. It often includes formal meetings to report to the city leaders and different government departments, followed by revision of the plan. The 'Evaluation' stage includes a formal evaluation meeting with experts from public institutes, organizations and universities. It provides technical recommendations for revising the plan. In the 'Finalizing' stage, the final version of the plan is prepared and presented to the main leaders in the City Council, City Committee and relevant bureaus. The planning team at this stage hands its task back to the city. In the 'Approval' stage, the plan is formally signed and approved by the City Council or the provincial government. The City Planning Bureau or Park Administration is responsible for the approval stage.

Both planning team and local planning organizers (City Planning Bureau and Park Administration) play important roles in developing the plans. For both the Master Plan of 2004 and the Urban Green System Plan of 2002, external planning teams from well-known planning institutes were invited to make the plans. It is believed that planners from well-known institutes offer better experience, knowledge and 'fresh' ideas about Weihai's future. Moreover, Weihai's own planning institutes at that time had not obtained the qualifications for developing this kind of plan (Du; Wang, Z.; pers.comms.). The City Council itself initiated preparation of the Road Greening Plan of 2004, which was not required by the statutory planning system, so it was looked upon as less important, and a local planning team prepared the plan. The planning teams conduct most concrete tasks in terms of investigations and making and revising the plan. The organizers of the planning process play an important supporting role, aiding the planning teams with surveying, data collection, coordinating the meetings with key stakeholders and discussing plan alternatives.

Table 5.4.3. *Process for developing plans at the city level.*
Sources: *Master Plan of* (2005); *Road Greening Plan* (2004); *Urban Green System* (2002); Guo & Zhao; Huang; Xu, G.Y. pers.comms..

Planning Stages	**Master Plan of 2004**	**Urban Green System of 2002**	**Road Greening Plan 2004**
Preparation and organizing planning team	Organizer: City Planning Bureau Planning team: Chinese Academy of Planning & Design	Organizer: Park Administration Planning team: Beijing Beilin Dijing Planning & Design Institute	Organizer: Park Administration Planning team: Weihai Lvyuan Landscape Design Co. & Weihai Landscape Research Institute
Investigation	Public survey of Weihai's important issues; basic data collection and document study; visiting various sites and meeting relevant government departments	Public survey on urban greening issue of Weihai; indoor document study; basic data collection and document study; on-site visiting and a long process of coordination with different districts	Investigations: 'Inventory of Weihai's Landscape Tree Species and Ancient Trees' (2004) and 'Investigation of Weihai's Street Trees in the Urban Area' (2004).
Preparing / revising and reporting the draft plan	Making and revising the draft plan and 4 formal report meetings to City Planning Bureau, Construction Committee, City council and bureau / committees at the city level, and Weihai's People's Congress and Chinese People's Political Consultative Committee.	Preparing and revising the draft plan and 3 formal report meetings to Park Administration, Construction Committee, and City council and bureau / committees at the city level.	Making and revising proposals and many report meetings with city leaders (General-secretary of the City Committee, the Vice Mayor), the Construction Committee and the City Council; and leaders from relevant departments—planning and construction departments from different districts.
Evaluation	Host: Weihai City Council Planning experts from Chinese Planning Associating, Chinese social science Academy, Shandong Providence Construction Department, Beijing University; Shandong Province City & Countryside Planning & Design Research Institute.	Host: Weihai City Council Urban green system planning experts from Shandong Province, Construction Ministry of China and universities.	Not held
Finalizing the plan	Finalizing the plan; 2 report meetings to main leaders of the City Council and to main leaders of the City Committee	Finalizing the plan	Finalizing the plan
Approval	The City Planning Bureau reported to the Shandong Province government to approve the plan	Did not go through this process. (It should be formally approved by the City Council)	Did not go through this process

The leaders of the City Council and City Committee and those of the bureaus and committees at the city level are involved in the plan preparation process. The draft plan is normally dealt with at a series of meetings, where the planning team reports to the leaders of planning organization (City Planning Bureau or Park Administration), the City Construction Committee, the City Council and the City Committee. As an important plan for the city, the Master Plan of 2004 was also reported to the leaders of the People's Congress and Chinese People's Political Consultative Committee (Weihai Committee) (*Master Plan of*, 2005). For both the Master Plan and the Urban Green System Plan, the leaders of the relevant bureaus and committees at the city level - e.g., Planning Bureau, Forest Bureau, Education Bureau, Environment Protection Bureau, Culture Bureau, Agriculture Bureau, Liugongdao Administration, High-tech Development Zone and Economic Development Zone - were invited to at least the final reporting meeting together with the City Council. Ad-hoc communications with the different sectors and zones also took place during the investigation stage (*Master Plan of*, 2005; Huang, pers.comm.). In the planning process of the Road Greening Plan 2004, the leaders of the planning and construction departments from different districts were invited to comment on the plan based on their local situation (Xu, pers.comm.).

The public is not much involved in plan development, except for the early investigation stage. Both the Master Plan of 2004 and the Urban Green System Plan of 2002 included a public survey in the early investigation stage. In total, 2121 people participated in the public survey for the Master Plan 2004 and 474 people for the Urban Green System Plan of 2002 (*Urban Green System*, 2002). Table (5.4.4) shows the main questions asked in the public survey for the Urban Green System Plan 2002. After the investigation stage, the development of the plan is a matter for the planners and city leaders only. The leaders of the People's Congress were invited to a report meeting of the Master Plan 2004. They should ideally represent public opinion. Experts are involved in the preparation of plans mainly through the final evaluation meeting (*Master Plan of*, 2005; Guo & Zhao; Huang, pers.comms.). The actors for the Road Greening Plan 2004 were all representing the government. "The planning result benefits different groups - the public, the government and the tourists. All parties obtain benefits, but during the process, we do not consider involving stakeholders other than the public sector" (Xu, pers.comm.).

After the Master Plan is approved by the provincial government, it has obtained legal status. The City Planning Bureau is responsible for implementing the plan along with enforcement of the City Planning Act (1989) and other regulations. The relevant departments of the High-tech Zone, Economic Development Zone and Huancui District help in the implementation and enforcement processes. The City Planning Bureau and

the City Council can also issue local regulations according to the immediate problems in the implementation and law enforcement processes.

Table 5.4.4. *Questions in the public survey for Urban Green System Plan of Weihai 2002.*
Source: *Urban Green System* (2002).

Questions	Options				
1. Do you know that Weihai is a Garden city?	Yes			No	
2. Do you know the city tree and city flower of Weihai?	Yes			No	
3. Are you satisfied with the urban greening in Weihai?	Satisfied	Relatively satisfied		Normal satisfied	Not satisfied
4. Do you think it convenient to go to the beach to swim?	Convenient	Relatively convenient		Normal convenient	Not convenient
5. How much would you accept to pay for entering the public park?	≤ 10 RMB	10-50 RMB		50-100 RMB	≥100 RMB
6. Which type of green space do you often use?	Comprehensive park	Specialized park		Community park	Others
7. Which type green space do you hope Weihai develops?	Comprehensive park	Specialized park		Community park	Others
8. Which types of facility in the park do you often use?	For rest	For entertainment	For exercise	For service	Others
9. Which type of green space do you most like in Weihai?	For rest	For entertainment	For exercise	For service	Others
10. Could you give some suggestions for urban greening of Weihai?					

Note: In the options for questions 6-7, the types of green space refer to the 'Standard for Classification of Urban Green Space' (see Annex 5, Table A5.2).

Even though the Road Greening Plan 2004 was not formally approved and does not have any legal status, the leaders did get an overview of the plan during its development process. When improving individual roads, road design is refined based on the plan. In this way the plan is gradually implemented in practice (Xu, G.Y., pers.comm.).

Process for planning and development of 'key projects' of the city
The term 'key project of the city' *(du shi zhong dian gong cheng)* was often mentioned during the interviews. The city constructs several key / high profile projects each year. Most of these key projects concern road improvement (including road greening), development or renewal of public parks or squares, and building of important public buildings and construction of their surrounding areas. The projects are often comprehensive municipal

works (or parts thereof) to improve a certain area (*Arrangement opinions for*, 2004; *Implementation proposal for*, 2003). According to the vice director of the Construction Committee, all the key projects of the city include greening tasks (Cai, pers.comm.). The Park Administration's working strategy for the key project of the city was that each year one key green project was implemented and one project designed, whilst yet another project was considered and reserved for the near future (Qi, pers.comm.).

The local landscape architects interviewed think that Weihai's urban greening depends more on the key projects of the city than on the Master Plan and the Urban Green System Plan (e.g., Huang, Wang, Z., pers.comms.). According to the vice-director of the Construction Committee, "the plan of the key projects of the city is in general based on the Master Plan and Urban Green System Plan. Besides, there are three criteria for prioritizing projects: first, according to the importance for the urban development—more important projects are implemented first; second, according to whether it is effective for attracting investment — the more effective project is implemented first; and third, according to whether the budget for the project could be arranged." (Cai, pers.comm.). The formal process of deciding on key projects is as follows: by the end of each year, different departments from the construction sector report to the Construction Committee what their construction plans are for the coming year. Based on this information, the Construction Committee prepares an implementation plan for the key projects. This plan is reported to the City Council, the People's Congress and Chinese People's Political Consultative Committee to be discussed and finally to be approved by the Standing Committee of the City Committee (Huang; Qi, pers.comms.). Public involvement seems of minor importance in the process; only the vice-director of the Construction Committee mentioned that the public would be consulted before a plan is approved.

In addition to the formal decision making process for key projects, some interviewees recognized that these key projects refer less to the Master Plan and the Urban Green System Plan than to the top city leaders' decision (Huang; Qi, pers.comms.). The Park Administration reports on its implementation plan for urban green space, together with plan / design proposals. However, this may be of little use—the city leaders may finally decide on other tasks (Huang, pers.comm.). A key project can be cancelled because of lack of funding or because of other spontaneous or more urgent projects. Sometimes, other local projects suddenly attract the city's attention and are upgraded to become city key project of the year (Huang; Wang, Z., pers.comms.). "Currently we have a lot of changes in our plans. Sometimes, the mayor or the Secretary-General of the City Committee is interested in a specific project and takes it as an 'image project'. He can prioritize this project as being of primary importance that year. This situation happens

often" (Qi, pers.comm.). According to the vice-director of the Construction Committee, the key projects are in general within the frame of the plans, but there is some flexibility within the frame. For example, a project might be in the long-term or mid-term implementation plan now, but next year it becomes the most urgent key project of the city (Cai, pers.comm.).

In the annual implementation plan for the key projects prepared by the Construction Committee, the size and main contents of each project are defined, budget is allocated, and a responsible group (persons and bureaus) is identified for each key project (see Table 5.4.5). The director of the responsible group is often one of the leaders from the City Council or the City Committee. Responsible persons from the construction sector are also defined, including a generally responsible person (normally the director of the Construction Bureau), a project responsible person, a project coordinator, a responsible person from the City Planning Bureau and perhaps a responsible person from the City Property Management Bureau (*Arrangement opinions for*, 2004; *Implementation proposal for*, 2003).

Table 5.4.5. *A typical composition of the group responsible for a key project of Weihai.*
Sources: *Arrangement opinions for* (2004), *Implementation proposal for* (2003).

Title	**Responsible persons / institutions**
Responsible city leader	One city leader from the City Council and City Committee
Leading organization	One or two bureaus, often including the Construction Committee
Responsible organizations	Many relevant bureaus, committees or even local governments
Responsible persons from the construction sector:	
• The generally responsible person	Often the director of the Construction Committee
• The project responsible person	Often a vice-director of the Construction Committee
• Project coordinator	Depends on the content of the project. (e.g. if greening takes a big part, then a leader from Park Administration is project coordinator).
• Responsible persons from the Planning Bureau	A vice-director of the Planning Bureau and a section leader
• Responsible persons from the City Property Management Bureau	A vice-director of the bureau and a section leader. (If many building demolishments involved).

In many cases, the detailed plans and proposals for the key projects are already prepared in advance. The Construction Committee representing the City Council invites external planning and design institutes or firms to

prepare a detailed plan / design proposal. In a few cases, competition is arranged among several invited external planning and design institutes. The proposals are normally integral plans / designs integrating infrastructure, building and green space. The proposal to be used is often decided upon immediately before the construction starts. This final decision is often made by the General Secretary of the City Committee or the mayor. The adjustment of the design proposal and the construction design is often done parallel with the construction process. The revision is sometimes made by the external design institute that made the original proposal. Sometimes revision is done by local design firms with approval of the original design institute (Qi; Huang; Wang, Z., pers.comms.). Design teams present the proposal many times to the Project Director Committee and the city leaders before it is approved. In Weihai, when the size of the project is more than 5 million RMB, its construction must be put out for open tendering among public and private construction firms. For smaller projects, the construction task can be assigned to local construction teams (Wang, Z., pers.comm.).

When construction starts, a Project Director Committee *(gong cheng zhi hui bu)* is established, which leads the construction process. It is in general based on the responsible group of the project in the implementation plan, including city leaders and leaders / employees from the relevant bureaus. Daily meetings are held to coordinate the immediate tasks and problems. Weekly and monthly meetings are also held to coordinate and discuss more important issues. Construction does not always follow the plan / design proposal. Significant changes can be made by the Project Director Committee on ad hoc basis and the city leaders' opinions. Sometimes, urgent revisions of the plan are ordered. In other cases, construction is directly done 'on the ground' after a decision is made. The construction process of a key project is typically very fast, lasting between several months and one year. The deadline is often set according to a national holiday (as a gift to the memorial day), a special major event of the city or a visit of some VIPs (e.g. Liu, T.; Qi, pers.comms.).

Public's opinion is not often considered during the process of developing key projects. Normally, as soon as the construction is started, the project plan is shown to the citizens by means of large billboards on the site, or by presentation in the media. Citizens can deliver their opinions through the mayor's hotline or through media hotlines. Usually, citizens of Weihai do not comment on key projects through hotlines, at least as long as the projects do not affect their daily life (e.g., Huang, Xu, pers.comms.). The project commissioners believe that they more or less know the citizens' opinion, because they are at the project site 'day and night', which offers many opportunities for informal communication (e.g., Qi; Tian, pers.comms.).

Process for planning and development of less important projects

The local governments and the two special zones of Weihai also conduct large projects within their jurisdictions. For large public green space projects, the planning and development process is similar to that of the key projects at the city level. Decisions about the projects are usually in the hands of the local governments. Since all planning power is centralized at the city level, the plans for large projects need to be reported to the City Planning Bureau, the City Construction Committee and the City Council for approval. The planning and design process is not as formal as for those of the key projects of the city. The composition of the project responsible group is at the local government level. A Project Director Committee is also established for the construction process. The leaders within the local governments play an important role in the process of project development (e.g. Hu, N.; Pang, pers.comms.).

For smaller public green space projects, planning and design is done very quickly or sometimes even omitted. Construction tasks are directly assigned to landscape construction firms. There is normally no Project Director Committee directing the construction process. The person-in-charge on behalf of the project assigner communicates directly with the design and construction teams. Once again, the leaders within the local government have a large influence on many decisions.

The process for developing semi-public and private green space, such as green spaces on campuses and in industrial areas, is also simple. When funding is available, the planning and design tasks are assigned to a design firm, whilst construction tasks are handed to construction firms.

Impact of statutory plans on the urban green space development process

Even though the vice-director of the Construction Committee refers to the Master Plan and the Urban Green System Plan as the basic frame for the key projects (Cai, pers.comm.), most green space planners and landscape architects who are aware of both the Urban Green System Plan and green space development think that the former does not play an important role in Weihai's urban green space development. Urban green space development does not follow the plan; instead it is mainly based on green projects (Huang; Lin; Wang, Z., pers.comms.). Many interviewees did not know the Urban Green System Plan at all, including the person who is responsible for green space development in the Economic Development Zone and some practitioners from private firms (Lin; Wu; Zhang, pers.comms.). However, all interviewees think that the plan is necessary (e.g. Huang; Li; Wang, Z., pers.comms.). As Wang, Z. (pers.comm.) stated: "At the overall level, it arranges urban green space and directs urban green space development. Awareness and use of the plan will be gradually improved".

Several reasons can be offered for the minor role of the Urban Green System Plan. First of all, urban green space development in Weihai has by far exceeded the plan in terms of green space norms. The Urban Green System Plan 2002 was based on the Master Plan 1994. Only two years after it was made, urban green space development already exceeded the plan (e.g. Huang; Wang, Z., pers.comms.). Second, Urban Green System Plan 2002 is not detailed enough and does not always fit to local development conditions and needs (Huang; Qi, pers.comms.). Tian (pers.comm.) mentioned that "the planners from Beijing are not very familiar with the local condition—they just stayed in Weihai for a short period (about a month)". Third, green space construction in reality is decided upon by authorities and not directed by plans (Huang; Qi; Wang, Z., pers.comms.). "This is the Chinese situation. Weihai authorities on different levels assign mandatory tasks each year based on the current need of development and available budget. Some of the tasks are not within the frame of the plans" (Huang, pers.comm.). Fourth, implementation of the plan is overlooked. Huang (pers.comm.) said: "In China, a Master Plan is adjusted about every 10 years, as is an Urban Green System Plan. So the plans are not considered seriously. (…) The construction administration system is not mature enough. The Urban Green System Plan has not really been put into use".

The planners of the Urban Green System Plan 2002 also think that the Urban Green System Plan in general does not have much impact on urban green space development—it at most has some impact within a few topics and a few green spaces. The planners are not much involved in implementation of the plan, but only offer some suggestions for implementation in the plan: "In China, plan implementation is generally not given attention nor followed. Our planning work normally stops when we hand in the plan. It then depends on the locals to bring the plan into play. (…) The Urban Green System Plan defines the land use for green space, but the city decides what kind of green space will be developed. (…) Whether the plan is used and how to use it are also up to the city. The Urban Green System Plan should have legal status after it is approved. (…) There are many laws in China, but implementation of the laws is too subject to flexibility" (Guo & Zhao, pers.comm.).

From a technical perspective, the planners think that the Urban Green System Plan should be made more applicable. "The Urban Green System Plan should not be derived from a guideline, but it should be based on the characteristics of a city. Preparing a green strategy during the city planning process may improve the situation. We think that urban green space planning should go through the following steps: Green Strategy, Master Plan, Urban Green System Plan, and implementation. In Weihai, there was no Green Strategy when the Master Plan was made. We prepared the Urban Green System Plan after city planning and within the frame of the Master Plan, and

thus there was very little freedom for us. The green sector has very low status. This is the main challenge for urban green system planning" (Guo & Zhao, pers.comm.).

In spite of the challenges, the planners are positive about urban green system planning activities: "In general, the Urban Green System Plan is the basic material for green space development. Even though it by itself does not have much influence on urban development, the discussions and communications during the planning process improve understanding of the importance of urban greening. There are activities in the planning of urban green spaces, developing parks and urban green spaces, and duty tree planting. This continuous impetus of greening concepts will improve the general understanding, which in a long run will influence urban development. Through the planning process, the city already has a general idea about how future green space will look. They can also use the plan as an argument whenever conflicts happen" (Guo & Zhao, pers.comm.).

COMMUNICATION BETWEEN ACTORS AND PUBLIC PARTICIPATION

During the urban green space planning and development process, actors interact in various ways. Communication can take place through both formal channels (e.g., report meetings, within the Project Director Committee and by use of mayor hotlines) and informal contacts (e.g., personal networks, leaders' verbal commands/orders). Since the government plays the leading role in Weihai's urban greening and since there is a lack of relevant NGOs and interest groups, most communication happens within the group of public actors, and between the public actors and those who plan, design and develop urban green space (i.e. often private or semi-private firms). Little communication takes place between public and private actors. Public participation is encouraged in planning guidelines, but only limited effort has been made so far and public involvement is likely not very high.

Communication among the public actors

In both the process of developing the statutory plans and the process for key projects of the city, there is intensive communication between the main public actors, and especially between the City Committee, the City Council, the Construction Committee, the City Planning Bureau and the Park Administration. Most decisions are made by the City Committee, the City Council and the Construction Committee. The City Planning Bureau and the Park Administration serve as their technical advisors and act as 'bridge' between the city leaders and the external planners and designers. Through a few proposal report meetings, other relevant public actors (other bureaus and special zones) are also involved in the decision process for plans and key projects (e.g., Du; Huang; Qi; Xu, pers.comms.). The planners for Weihai's Urban Green System Plan 2002 said: "Planning is not only a technical issue

but also a process of communication and coordination. The urban green spaces we were dealing with were managed by different bureaus and different zones. For planning the whole city, we need to coordinate with these and include their opinions and suggestions. There was a long coordinating process by means of a series of reporting meetings" (Guo & Zhao, pers.comm.)

As mentioned, during the process of making a plan or a proposal, most communication is within the group of government actors. When reflecting on the planning process of the Road Greening Plan of 2005, one of the planners said: "There are many communications between the actors through proposal report meetings. The actors all represent the government. No other stakeholders are involved. (…)We do not develop the project from this (i.e. a communication) perspective. The outcome benefits different interest groups—the public and the government. But during the process, we do not consider this issue" (Xu, G.Y., pers.comm.). The organization of the project responsible group (see Table 5.4.5) for key projects can also serve as illustration of the intensive communication among the public actors.

Although there are formal channels for dialogue within the public sector, such as proposal report meetings, communication across different sectors and zones is probably limited. The departments relevant for urban green space are the Park Administration, Forestry Bureau and Agriculture Bureau, Land Use Administration and Ocean & Fishery Administration. In addition, the High-tech Zone, the Economic Development Zone and Liugongdao Island have quite independent administrative power over their green spaces. In the daily work, there is not much cooperation and communication across these sectors and zones. "The responsibilities among different departments are very clear, as well as the border between the areas under their responsibility. They have also their own professional tradition, approaches, regulations and norms to manage their green resources. Because of the existing governmental system, there is more communication in a vertical way than a horizontal way. This results in some gaps in the actual management of urban green spaces. For example, there is no department taking care of the registration of urban green spaces. The management of the forests in the city still follows the traditional management approach for forest stations and it does not fulfil the need of the urban population" (Du, pers.comm.).

There have also been communication barriers between the City Planning Bureau and the City Park Administration. Until the dissolution of the Park Administration, they were both under the City Construction Committee and responsible for making the Master Plan and Urban Green System Plan, respectively. "We refer to the Urban Green System Plan, when making the Master Plan. However, it is not very useful, because the overall green structure is similar to a plan we made in 2001, 'Weihai City General Urban

Design'. In the City Planning Committee, there are experts from the Park Administration who could directly participate in the planning process and decision making about the plan. We would like to involve people from the Park Administration in the city planning process. But actually, the Park Administration and the City Planning Bureau have very little communication because of lack of time" (Du, pers.comm.). Tian (pers.comm.) stated: "Within the construction sector, cooperation between different departments is not very difficult. There are dialogues during the proposal meetings. However, the Park Administration is not much involved in the early planning phase. The plan is normally made very fast and is thus not very realistic nor detailed. The main focus of the plan usually relates to the overall principles."

Some relevant departments think that they are not the main actors for urban greening, since most urban greening projects are conducted by the Construction Committee and Park Administration, including the design, management and implementation. This is the case, for example, of the Forestry Bureau: "Funding for greening goes mainly to those types of projects. The Forestry Bureau would like to actively cooperate and participate in urban greening. But because of the limited budget, it is very difficult for the Forestry Bureau to carry out greening projects. I participated in the proposal report meeting for the Urban Green System plan 2002 and suggested that the suburban mountains should be included in this plan, as they are important for the environment of Weihai city. The plan inspired me. Now I understand better Weihai's urban green structure and the overall goals for greening" (Li, pers.comm.). Hu, X.Y. (pers.comm.) said about the role of the Tourism Bureau that "(it) is not a main actor for urban greening, but we do participate. Through the planning process and the proposal meetings, the other sectors consult us for our opinions and suggestions. Reasonable suggestions are always accepted".

Communication between planners / designers, city leaders and other actors

Through proposal report meetings, the external and local planners and designers from major firms communicate often with the public actors, and especially with city leaders. Conflicting opinions exist between the two groups of actors. The planners and designers have to compromise between their technical knowledge and the leaders' opinions. Most often, the leaders' opinions have a strong influence on the final decision. Wang, Z. (pers.comm.) stated, for example: "The top city leaders are often involved in the large greening projects in Weihai. They often participate in the proposal presentation meetings and directly put forward their opinions about project design. For some important projects, during the construction stage, they also visit the site to supervise the construction process. It would be better if the leaders did not decide so much about the projects; instead, an advisory

expert group could evaluate projects". There are also more positive opinions on the communication between these two groups, such as those of Qi (pers.comm.): "The city leaders nowadays are very open and respect professional knowledge". Tian (pers.comm.) mentioned that "(t)he general understanding of the leaders and the public has not developed. We need some time to persuade them to use our concepts. Now the city leaders want to listen to the view of the experts. The improvement of our mutual understanding needs some time".

In order to realise a project, there are also tendencies for planners / designers to try and find solutions that are in favour of the city leaders. "Because of the leaders' opinions, proposals are always changed during the construction process. Normally the designers agree with the changes—they do what the leaders like" (Huang, pers.comm.). The director of the Park Administration said that "my role in the process is to act as a bridge between the leaders and the professionals. I need to forward the leaders' wishes to the designers, and integrate the designers' idea into the project" (Qi, pers.comm.).

For preparing important city plans and project proposals, the local planner / designers often consult external experts within the profession. "The experts we communicate with are mainly planning / design experts. We have not had much contact with the ecologists. The cultural experts were involved in the early process of park development" (Tian, pers.comm.).

The small firms for green space design and construction feel that they do not have much influence on the decisions relating to public green spaces. "The main role is for the Park Administration. My role is not very big. I am not involved in the decision process about where a green space should be established. In our current system, there is no opportunity for me to participate in the decision making and to put forward my ideas. I cannot participate in the government projects' decision. But I can participate in the other types of greening projects, for example, the development of institutional green space. However, I have informal dialogues with the Park Administration. Whenever I have the opportunity, I always try to communicate my ideas with them. Even during the construction process, I can communicate with the designers and it is still possible to make suggestions for improvement. For the small parts, I can make my suggestions. For the general greening strategy, I do not have much influence, even though I have my own ideas" (Zhang, pers.comm.).

Public participation

In the Urban Green System Plan 2002, public participation in the planning and management of urban green space is emphasized: "Even though urban green system planning is currently still a government activity, the construction and management of urban green space needs the participation

of the government, the planners and the public. (…) The public are the main user of the urban green space, whose opinions represent the society's needs" (*Urban Green System*, 2002). The Urban Green System Plan includes some suggestions for improving public participation in the implementation process of the urban green system plan. These are: 1) conduct a public survey in the urban planning and design process, in order to incorporate the public's will; 2) use propaganda to increase public awareness about the environment, in order to protect green space actively; 3) organize volunteer green wardens especially involving retired people, in order to improve the daily management of urban green spaces; and 4) promote 'duty-tree-planting' and 'adopting green space' activities, in order to incorporate the broader social force into the construction and management of urban green spaces.

During the planning process for Weihai's Urban Green System Plan 2002, a public survey was carried out, which illustrates the efforts towards public participation. "(The survey) was part of the early investigation stage. But we did not have public discussions during the later process. Actually the city plans are always a 'national secret'. China has no tradition of openly discussing city plans. Instead, we discussed again and again with the officials at different levels" (Guo & Zhao, pers.comm.). Through the internet, another public survey / competition was conducted to choose names for the coastal parks. "Many people participated, but the ideas are sometimes too personal interest oriented. Involving the public in the general green planning process is still little realised. The environmental awareness of the public is not yet very strong" (Tian, pers.comm.).

Normally the public's opinions are not openly consulted before the decision on development is made, neither is this done in the design process. A common way of communication with the public is introducing the project through billboards placed on the project site when the construction starts. Telephone numbers are included and public inputs are encouraged. However, usually the citizens do not express their opinion (Huang, pers. comm.). Even though there is no formal communication with the public in the design and construction process, the practitioners who design or develop urban green space think that they have many opportunities to communicate with the public. They also think that they know what the public likes: "There is some communication between the designers and the citizens. After all, we all live in the same environment / context" (Tian, pers.comm.). Designer Qi (pers.comm.) said: "I can communicate with the public because I am always at the construction site."

Other channels of communication between the public and the government are through hotlines and the internet. There are a 'mayor hotline', 'urban construction hotline' and newspaper hotlines. On the city government's website, there are also mailboxes to the city leaders. The public can always express their opinions to the city leaders and city government through

hotlines and internet (e.g., Huang; Xu, G.Y.pers.comms.). “Many citizens do not care much about the general issue of urban green space development. They care more about the issues that are closer to their daily life, such as housing, food, health care, income. (...) In general, citizens’ awareness is not high enough. Our living standard has not yet come to that high level. People express their opinion only when it affects their own interest, for example, if a tree blocks the light” (Xu, G.Y., pers.comm.).

Interviews with a few citizens indicated that members of the public do have opinions about the general issue of urban greening, but they are reluctant to express them to the government. The public is concerned that the government spends too much money on greening. “We do not know whether green space development exceeds the economic development. Every year the allocation of the governmental budget needs to be approved by the People’s Congress. Theoretically allocation should be reasonable, but we do not know how this works in the reality. Our officials all want to do good things for the common people. But ‘doing good things’ is often based on personal will. Nobody knows whether the common people are satisfied or not. (...) “Our organization includes elderly people or retired people. We can only observe things. We always say that the best attitude for us is to ‘shut our ears and don’t care about what is happening in the outside world’ We could not change anything when we were working and it is even no use after we have retired. We discuss about this now, but officially we do not dare to say this. We need to minimize the involvement with power and money and do things following our good consciousness, so that we can live peacefully the rest of our life. I feel that most of the retired people have this point of view” (Shi & Sun, pers.comm.).

Wang, X.G. and Xu, G.Y., (pers.comms.) said about this issue: “If there is dissatisfaction, people normally do not formally contact the administration. Most people do not seem much concerned about urban green space development. We think that it should be the government officials’ headache, as the city’s image is their image when they receive guests. Citizens are seldom involved in the planning, design and management of urban green spaces. The city normally invites experts to do that. Citizens normally just accept what they get, unless it directly concerns their own interest, for example, if there is no space for parking. There actually are channels available if people want to express their opinions. These include, for example, calling the Residents’ Committee and managers of the Property Management Company. As regards the general green space of the city, the representatives of the People’s Congress can collect people’s opinions. Public opinions are collected regularly for the Congress”.

‘Duty-tree-planting’ and ‘adopting trees / green spaces’ activities are strong ‘channels’ for involving the public in the establishment and maintenance of urban green space.

SUMMARY

This section introduced the main actors involved in urban green space planning and development in Weihai. It also presented the main processes of planning and development of urban green spaces, as well as the interaction among the actors during these processes. The analysis shows that public actors play the leading role in green space planning and development. Among these public actors, the top city leaders are involved and have a strong influence on the decisions made. Interaction and communication across sectors and city zones is not sufficient. Even though the planners and designers often communicate with city leaders and public actors, there are conflicting opinions between these two groups of actors. There is a growing number of semi-public and private actors relevant to the context of green space, but they are not much involved in the planning and decision making. Very few NGOs are active in Weihai, and they are not involved in green-space planning and development. Public participation is encouraged by the government and there are some formal channels for expressing public opinion. However, channels for involving the public at the early stages of the planning and decision making process are missing. The public, on the other hand, does not seem very motivated to express its opinion. Thus, overall, the process of planning and development of urban green spaces involves only a limited number of actors, mainly within the public sector. Other stakeholders and the public are far from having an influence on decision making.

5.5 Urban green space development in practice: activities and outcomes

This section first introduces the main activities of urban green space development in Weihai. Subsequently, the outcomes of these activities are presented. The outcomes include both what has happened on the ground and its influence on the city and its citizens. Even though urban greening has been an important policy in Weihai for much longer, this section mainly focuses on the past ten years (1997-2006), i.e. the period that is most relevant to the current discourse on urban green space planning and development.

URBAN GREEN SPACE DEVELOPMENT ACTIVITIES IN PRACTICE

During the past ten years, the City Government of Weihai has increasingly invested in urban green space development. Figure 5.5.1 shows the urban green space construction budget of the City Park Administration. In real terms, the average annual budget has increased 329 times within the last twenty years. Figure 5.5.2 shows the distribution of the total urban green space construction budget (1982-2006) among different types of urban green space. At the city level, the city government, through the construction sector

(the City Construction Committee and the City Park Administration), has put most effort into developing public parks and squares, and road greening. At the city scale, there have also been efforts to develop or improve several other types of green spaces, viz. some small public parks and public green spaces between urban blocks, green spaces within older residential areas, and green belts along the rivers (*Table of information*, 2007; Huang; Wang, Z., pers.comms.).

In addition, through the forestry sector, the city government had made a major effort during recent years to afforest the barren hills, newly urbanized farmland and the green corridors along the road (*Circular about issuing*, 2002; Li, pers.comm.).

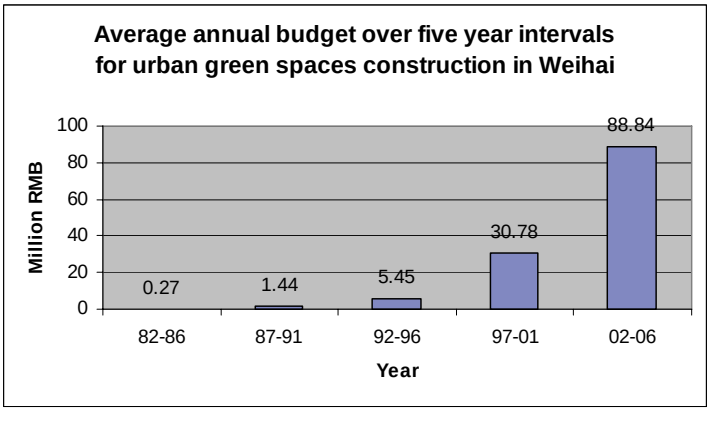


Figure 5.5.1. *Average annual budge over five year intervals for urban green spaces construction in Weihai.*
Source: *Table of information* (2007).
Note: RMB: Renminbi (1 RMB equals about 0.094 EURO). The budget only includes finances allocated by the City Park Administration. It does not include the urban green spaces construction budget through the City Construction Committee, the High-tech. Zone and the Economic Development Zone.

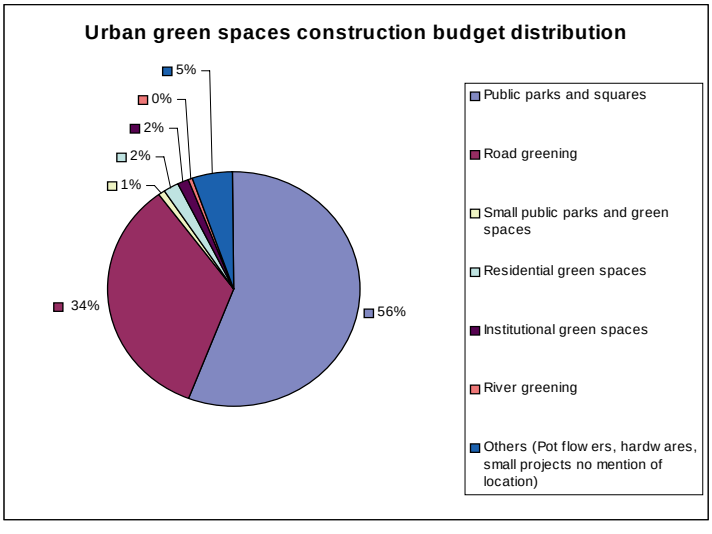


Figure 5.5.2. *Distribution of total urban green space construction budget (1982-2006) among different types of urban green space in Weihai.*
Source: *Table of information* (2007).
Note: The budget only includes finances allocated by the City Park Administration. It does not include the urban green spaces construction budget through the City Construction Committee, the High-tech Zone and the Economic Development Zone.

Public parks and squares

Weihai city had very few urban green spaces before the 1980s. Huancuilou Park was the only large city park at that time. Between 1989 and 1996, the city developed several large squares and public green spaces or parks, including Haibin Park, Huancuilou Square, Weihaiwei Square, Renmin Square, and Kunminglu green space (*Park and greening*, 2004). A large proportion of these project areas resulted from demolition of old buildings.

These public open spaces were made in a simple way (i.e. in design and use of materials). However, they have played an important role in meeting the increasing daily recreation needs of the expanding city. As an early exercise in creation of public open space, they also provided experience for later green space development practice (Huang; Wang, Z., pers.comms.). Since 1997, there has been stronger action to develop public parks and squares, mainly due to the increased budget available and a stronger city policy for improving the investment environment. Almost every year, at least one large park has been newly developed or redeveloped from an earlier state (see Table 5.5.1).

Table 5.5.1. *Main park and square projects in Weihai from 1997 to 2006.*
Sources: Office of Weihai Local History (1999); *Parks and greening* (2005); *Parks and greening* (2004); *Re-examination of national* (2003); *Table of information* (2007).

Construc-tion	**Name**	**Area**	**Project assigner**
1997	People's Square (2nd stage)	0.31 ha added to the existing 6.2 ha city square	Weihai city
1997	Haibin Park (1st stage redevelopment)	After redevelopment, 7.54 ha belt park	Weihai city
02/1998 – 04/1998	People's Square (redevelopment)	Redeveloped city square to 6.51 ha	Weihai city
03/1998 – 06/1998	Haibin Park (2nd stage redevelopment)	After redevelopment, 8.05 ha belt park	Weihai city
03/1999 – 10/1999	Haishang Park (new development)	13.4 ha (6 ha green space) new comprehensive city park	Economic Deve. Zone
11/1999 – 09/2001	Weihai Park (new development)	67.6 ha (36.1 ha green space) new comprehensive city park	Weihai city
11/2001 – 04/2002	Haigang Park (new development)	4.36 ha (3 ha green space) new comprehensive city park	Weihai city, sponsored by Weihai Haigang Ship Company
11/2001 – 04/2002	International Beach Park (1st stage redevelopment)	No data	High-tech. Zone
12/2001 – 05/2002	Haiyuan Park (new development)	7.52 ha (6 ha green space) new comprehensive city park	Weihai city, sponsored by Weihai Haiyuan Power Company
2002 Spring – 10/2002	Qishi Park	2 ha new park (traditional Chinese garden style)	Economic Development Zone
12/2002 – 05/2003	International Beach Park (2nd stage redevelopment), also called Haijing Park	After redevelopment, 48 ha beach park (including 29 ha sand beach and 17.8 ha green space)	High-tech. Zone
2003	People's Square (redevelopment)	Added 1.42 ha to the former 6.51 ha city square	Weihai city
2006	Waitan Park (extending and redevelopment of the earlier Haibin Park)	After redevelopment, 20 ha (7.2 ha green space) comprehensive park and city square	Weihai city
2006 Autumn –	Yuehai Park (new development)	15.4 ha (about 9.5 ha green space) comprehensive city park	

About 50 years ago, the eastern coast was all sandy beach. Because it is close to the city centre, the sites were almost completely urbanized by permanent or temporary buildings before the parks were developed. The coastline was littered with garbage from nearby households, industries and fish farms (Huang; Qi, pers.comms.). Development of the parks involves extensive preparation procedures and activities, including reclaiming land from the sea, demolishing old houses, and building a comprehensive

shoreline revetment. The northern stretch along the eastern coast, where Waitan Park is now situated, was the earliest park stretch in Weihai city, evolving from Haibin Park in the 1980s to Waitan Park constructed in 2006 (after several redevelopments) (e.g., Huang; Qi; pers.comms.). Each time, the work involved reclaiming more land from the sea and improving the design of the park, service facilities and vegetation. The current Waitan Park has replaced almost all of Haibin Park, except for the trees close to Haibin Road. Further south, Weihai Park and Haishang Park were developed more recently (during the late 1990s) and have not yet experienced redevelopment. Most parks along the eastern coast are built on earth fill. Only a small tract of sandy beach is kept in Haishang Park.

The northern coast was relatively far from the city centre and its sandy beaches were deserted until the early 1990s, although there already were some buildings and small businesses in the area. The beach was full of wild grasses and there were no accessible roads, drinking water or electricity (*Parks and greening*, 2005). Since Weihai's High-tech Zone was established in the early 1990s, the northern beaches have also experienced a multi-step development, including reclaiming the sandy beaches, demolishing buildings and pouring sand fill to expand the beach. In 1998, more infrastructure and service facilities were developed for sea bathing. The subsequent redevelopment in 2002 mainly focused on developing Haijing Park, a green belt park along the sandy beach, including green spaces, several city squares and recreational facilities. Figure 5.5.3 shows the locations of the coastal parks developed during the past ten years.

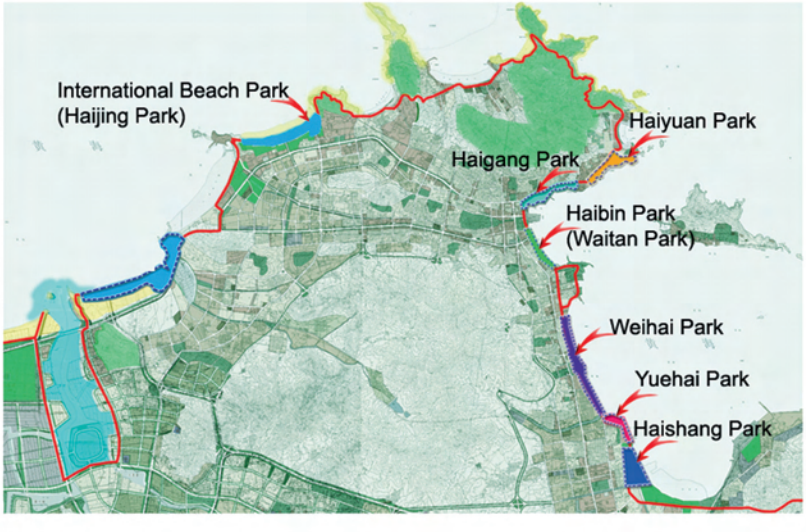


Figure 5.5.3. *Locations of Weihai's coastal parks developed during the past ten years.*
Source: Based on an illustration by Weihai Park Administration.

Most newly developed comprehensive parks (see Classification of urban green space, Annex 5, Table A5.2) include squares. These have been often constructed together with the parks. People's Square is the main city square, centrally located in the front part of the city government building. It had been a focus of urban green space development during recent year. Within the past ten years, the square and its attached green spaces have been extended and improved three times.

According to an experienced landscape architect who has been involved in the major city greening projects for many years, the developments in earlier years were relatively small. The focus of the parks and squares developments was mainly providing vegetation and facilities for basic recreational functions, while the development focus, especially after 1997, has been to develop 'fine-quality projects (*jingpin gongcheng*)' (Huang, pers.comm.). According to many landscape architects interviewed, 'fine-quality projects' are those with good materials (for construction and vegetation) and with visual highlights (e.g. Huang; Wang, Z.; Tian, pers.comms.).

The strategy of a coastal park belt was not clearly defined in the 1994 Master Plan of Weihai (*Master Plan of*, 1996). For example, Haijing Park (along the international beach park) was a protection green belt in the plans. Except for Haishang Park, the parks along the eastern coast were simply narrow green strips (*Master Plan of*, 1996; *The traffic and*, 2006). However, the Urban Green System Plan (UGSP) of 1994 suggested a 50 km green belt along the coastline (*Urban Green System*, 1994). It also called for developing beach parks in the High-tech Zone and large city parks in the Economic Zone. Haibin Park was suggested in the 1994 UGSP, but it was already an ongoing city project at that time. The development of Weitan Park in 2006, which is constructed on the site of Haibin Park, could not be found in any formal plan.

Road greening

At the city level, road greening during recent years focused on the main city roads that present 'the face' of the city (see Figure 5.5.4). Some smaller city roads have also been foci because of special events, for example as a drive-by road for a national leader's visit (Wang, Z., pers.comm.). Many road greening projects have been mainly for beautification of the road. Others were a part of a comprehensive development or redevelopment of a city road. Road redevelopment projects are done mainly for two reasons (Wang, Z., pers.comm.). First, former urban roads were too narrow and needed to be widened to meet growing urban traffic and pedestrian use. Second, because of urban sprawl, former inter-city roads needed to be upgraded into city roads equipped with more facilities. New main city roads have also been

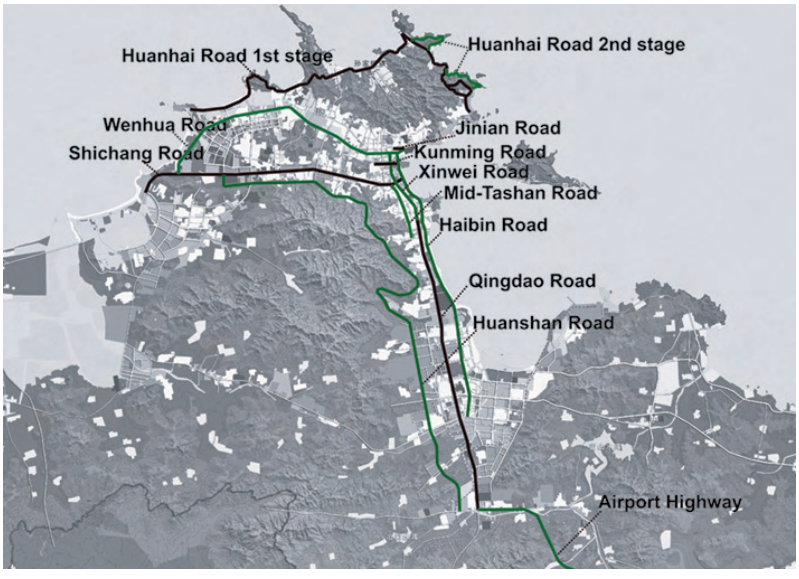


Figure 5.5.4. *Locations of Weihai's main road greening during the past ten years.*
Sources: Based on *Master Plan of* (2005); *Road Greening Plan* (2004); and this study's findings.

built in the surrounding areas to sustain the growing city transport, for example Huanshan Road (road around the mountain), or to provide a landscape road for tourism, for example Huanhai Road (coastal road). Greening of the Airport highway was a key city project as it gives a first, important impression of Weihai city to national and international guests.

Road greening has been undertaken repeatedly along some of the most important city roads (*Table of information*, 2007) (see Table 5.5.2). For example, Qingdao Road, as a city access road, had greening improvement almost every year from 1997 to 2004. Finally, it was improved more comprehensively from 2004 to 2005. There were several green project steps along Wenhua Road from 1997 to 2005, and its greening was improved again in 2006. Haibin Road, as a main road close to the city centre, also underwent greening improvement several times during this period. Xinwei Road, the road leading towards People's Square, originally had an earth surface. After its redevelopment in 1981, it was 30 m wide with a 2 m green median. Further redevelopment in 1997 widened it to 50 m with a 7.5 m green median, for which purpose 1.6 ha of buildings along the road were demolished. A comprehensive road greening project was undertaken for Jinian Road in 1999, further comprehensive road greening was done once

again in 2006 (Office of Weihai, 1999; *Parks and greening*, 2005; *Parks and greening*, 2004; *Re-examination of National*, 2003).

Table 5.5.2 Main road greening projects in Weihai between 1997 and 2006.
Sources: Office of Weihai Local History (1999); *Parks and greening* (2005); *Parks and greening* (2004); *Re-examination of National* (2003); *Table of information* (2007).

Construction time	**Names of roads**
1997	Xinwei Road (redevelopment and greening)
	Wenhua Road middle stretch (redevelopment and greening)
1998	Haibin Road (redevelopment and greening)
1999	Qingdao Road (greening improvement)
	Southern Haibin Road (greening improvement)
	Kunming Road (redevelopment and greening)
	Jinian Road (greening improvement)
2000	West Shichang Road (greening)
	Haibin Road (greening improvement)
	Wenhua Road (greening)
	Qingdao Road (greening improvement)
2002	Huanhai Road 1st stage (new road and greening)
	Wenhua Road (greening improvement)
	Qingdao Road (greening improvement)
	Haibin Road (greening improvement)
2002-2005	Shichang Road (3rd stage redevelopment and greening)
2002-2003	Huanshan Road (1st stage new road development and greening)
2004	Huanshan Road (2nd stage new road development and greening)
	Haibin Road (greening)
2004.4-2005.6	Huanhai Road 2nd stage (new road and greening)
2005	Qingdao Road (comprehensive redevelopment and greening) Airport Highway (redevelopment and greening)
	Gongyuan Road (greening)
2006	Wenhua Road (greening improvement)
	Mid-Tashan Road (greening redevelopment)
	Jinian Road (greening improvement)

In the earlier years, road greening was on a relatively small scale, mainly focusing on some short main roads in the city centre. For a long city main road, for example Wenhua Road, both the greening design and road green space development proceeded stepwise over several years. In more recent main road development (after the year 2000), road greening has played an increasing role as part of comprehensive redevelopment. For example, road greening was a major part of the Qingdao Road and Airport Highway redevelopment from 2004 to 2005, as was Huanhai Road redevelopment 2nd stage from 2004 to 2005. Road greening of these main city roads was in the form of annual key city projects that were strongly supported by city leaders. In addition to the general road redevelopment plan and the engineering plan,

there was landscape design for road greening. Road green space was more carefully designed and created together with the road construction.

Road greening design usually defines the width of the green strips on both sides of the road, as well as their green space types, vegetation and landscape character. The green strips of the main city roads often extend to more than 30 metres on each side of the road. They are either protection green spaces with ecological and landscape functions or belt parks (see Standard for Classification of Urban Green Space, Annex 5, Table A5.2). Road greening and road redevelopment in the built-up areas have often included green medians, pedestrian paths, road corner green spaces, green belts and/or linear parks. Developing the green belts on both sides of the road has involved a long process of demolishing buildings and reclaiming the land, which could not all be undertaken at once. As a result, the green strips on both sides of the road have differing widths along different stretches (see Figure 5.5.5). The development of new city roads along the coastline and around Likou Mountain required the removal of some natural vegetation. Greening tasks included planting road trees on both sides of the roads, developing squares and green spaces for resting and sightseeing, creating environmental art decoration, greening the damaged slope surface by planting grasses, and large-scale afforestation of the visible areas up to 2 kilometres along the road (Li, pers.comm.; Field visits, 2006).

Figure 5.5.5. *Road greening in the built-up area of Weihai City—example of a stretch of Qingdao Road.*
Source: Weihai Lvyuan Landscape Design Co. Ltd. (2004).

Redevelopment of the city main roads was suggested in the short-term plans of the Master Plan 1994. For example, projects were suggested for western Wenhuan Road, Shichang Road, southern Haibin Road, Huanshan Road and Xinwei Road, Yuanyao Road and Ruancun Road (*Master Plan of*, 1996). The Urban Green System Plan 1994 did not emphasise road greening (*Urban Green System*, 1994), although it suggested roughly 10-20 metre green strips along the main city roads. Road greening of the main city road was emphasised in the Urban Green System Plan 2002 (*Urban Green System*, 2002). The plan suggests road greening of several main city roads: Qingdao Road, Wenhua Road, Shichang Road, Haibin Road and Huanhai Road. Weihai City road greening practice during the past ten years has obviously

exceeded the plans. Planning for road greening has become more systematic. In 2004, the city government assigned to the City Park Administration the task of preparing a comprehensive plan and planting design for most of the city main roads, a plan which would provide general guidance for future road greening in Weihai (Xu, G.Y., pers.comm.).

Several reasons can put forward as to why road greening in Weihai has sometimes takes so long. First, main road dvelopment before 2000 involved lengthy processes; integral design was not yet in general use and road greening design was not detailed. Second, provision of green spaces on both sides of the road depends on demolition of existing houses and reclaiming land, which was often done step by step. Third, some city main roads, like Wenhua Road, run through different administrative zones. Each zone was responsible for greening its own road stretches, sometimes using their own design. Road greening then depended on the resources of each zone at a certain time. Often the city needs to coordinate the first step of road greening and then continually promote its improvement.

Small parks and green spaces, residential areas and rivers

The small parks serving certain urban districts are usually located close to residential areas. Small green spaces are often situated at road corners or beside city roads. The size of small parks and green spaces ranges from several hundreds to several thousands square metres. Even though they are small, these parks and green spaces are characteristic types of green space in Weihai (Huang; Wang, Z., pers.comms.). In recent years, the city has made efforts to improve these small parks and green spaces. Improvements have included renewing vegetation and pavement, and changing or adding new facilities, such as seats and facilities for exercise. The purposes of the improvements were first to make the green spaces fit better to current aesthetic and design standards, and also to make them more suitable for recreational uses (Wang, Z., pers.comm.).

The city has also made efforts to renew a number of old residential areas. These were built before the open housing market began and were normally social housing offered by state enterprises or institutions to their employees. Until most recent years, these old residential areas were managed by the city. Within old residential areas, there were usually insufficient green spaces and the quality of the available green spaces was very low. During the past ten years, there has been a policy at both local and national level to renew the environment of the old residential areas. Particularly in the period between 2000 and 2002, the city launched several campaigns, and for each campaign, a group of old residential areas was renewed. Creating more green spaces and improving their qualities are parts of the comprehensive renovation of these areas. As in the case of the small parks and green spaces, improvements included renewing vegetation and pavement, and changing

and adding new facilities, such as seats and facilities for exercise (Wang, Z., pers.comm.). The outdoor environment of the residential part of the City Government's Jvhuading area has been improved four times during the past ten years (*Table of information*, 2007).

Another effort by the city has been greening of riverbanks. This effort has often been a part of comprehensive river renovation projects. Until the very recently, the river banks were often made of concrete. Vegetation or tree belts were simply added to both sides of the rivers. There has been a tendency to combine river greening with water quality improvement. Natural river banks have been used, and green belts or park belts were added along the rivers. The first point of departure has become improvement of water quality and the aesthetics of the river, and second is provision of recreational functions where possible (Wang, Z., pers.comm.). River greening has been often done through large-scale actions. One action may include the greening of several rivers at the same time.

Afforestation

Weihai city, through its Forestry Bureau, has also worked at the regional city scale to green the overall environment. Within the administrative area of Weihai City, most of the afforestation activities have been applied to the areas surrounding the built-up city (Li, pers.comm.). The main actions relevant to urban greening have been: to 'afforest barren mountains', to 'withdraw from farming and return to forests' on slopes of more than 20 degrees, to develop 'green corridors' along inter-city roads and railways, and to construct a 'forest city' (*Circular about issuing*, 2002). The afforestation of barren mountains was the main focus before 2000. Since 2000, the actions of 'withdrawing from farming and returning to forests' and developing 'green corridors' along inter-city roads and railways' have been given greater attention (Li, pers.comm.). The 'Forest City' concept was launched in 2003. Most of the green spaces that are produced by afforestation activities are ecologically protected woodlands (*ibid.*).

'Duty-tree-planting' is the basic policy and instrument for greening the overall environment, including the establishment of forests. Most of the 'duty-tree-planting' activities have been implemented by organizing various public units, for example, public institutions, administrations, enterprises and schools. For the areas that are far from the city's built-up areas, the Forestry Bureau also assembles professional teams to conduct the afforestation tasks (Li, pers.comm.). Based on the 'duty-tree-planting' policy, Weihai city during recent years has initiated various measures. An effective movement has been the 'adopt a hill' movement; in 1998 the city launched this movement whereby public units 'adopt' hills for several years and become responsible for greening and maintaining them (*ibid.*). The greening of the hills has been examined every year by the City Forestry Bureau. Since 2003,

the results of ‘adopting hills’ and ‘duty-tree planting’ activities have become one of the criteria in annual evaluation of city level public administrations (*Circular about issuing*, 2002; *Circular about issuing*, 2006; Forestry Bureau, 2006).

In addition to the above, the city has explored other measures, for example schemes for ‘adopting green space’, ‘planting memorial trees’, and ‘planting memorial woodland’. Different themes have been suggested so that people could find links with their life stories. For example, a newly married couple could plant a ‘lovers’ tree’ after their wedding ceremony. The city has also organised competitions for ‘Green Model Urban Work Unit’ or ‘Green Model Village’. Those citizens and organizations making substantial contributions to these activities and competitions were rewarded with a certificate in an open ceremony (Forestry Bureau, 2006).

Other green space development at the sub-municipal and local level

Other planning and development of urban green spaces has been mainly project-oriented, developed by local governments, institutions, enterprises and private developers. These involve several types of green spaces, viz. road greening, greening the environment for future investors, green spaces within residential areas, institutional green spaces, local parks and tourism spots, and tourism villages.

Weihai’s two special zones, the Economic Development Zone and the High-tech Zone, were set up in the early 1990s on previously rural lands. The special zones at that time included some tidal flats, coastal protection forests, small villages and their farmlands and hills (Huang, pers.comm.). Most of the green spaces have developed during the past ten years. In addition to supporting the city in implementation of large greening projects, such as greening of the main city roads, the two special zones have had their own active greening practices. Greening has been an indispensable part of new road and public building developments. Wherever basic urban construction has been undertaken, greening followed. Since 2003, an overall strategy has become clear, i.e. greening the general environment first in order to attract investment and promote the development of the new zones (Lin; Liu & Sun, pers.comms.). Early practices showed that green environment development apparently brought economic benefits, especially in raising housing prices around green spaces (*ibid.*).

The governments of the special zones have been developing road green belts, public parks and squares, and green spaces between tracts of land waiting for investors. The future investors are responsible for development within each site, including green space. Since there has been less land use pressure in the new zones and almost everything was constructed from scratch, standards of the new green spaces have been higher than those of the old built-up areas of the city. The quantitative greening criteria have been

better followed; for example, the green belts along the roads were made 30 m wide throughout (Huang, pers.comm.).

Local governments at town and village levels have become enthusiastic about developing local parks, green spaces and tourism spots within their own jurisdictions. Some newly urbanized villages have developed their own local parks, based on the newly afforested hills. Two examples are Mingcui Park in Goubei Village (see Annex 6), Economic Development Zone, and Donglaotai Park in Donglaotai Village, High-tech Zone. Both parks are the result of bottom-up green space development by the local villages to provide recreational opportunities for their residents. During the process of developing parks, these developments received attention and encouragement from the leaders at the special zone and city level. In both cases, the leaders encouraged larger-scale tourism development based on the parks (Liu; Pang, pers.comms.). Huanhai Road's second stage development was construction of a tourism area on coastal hill slopes. It was also initiated by Sunjiatan Town, and supported by Huancui District Government and City Government (see Annex 6).

In recent years, there has been an increase in greening activities within residential areas, and within the areas belonging to institutions, companies and industries. There are national and local regulations / criteria for greening these areas. In addition, the city encourages the greening of private or semi-private areas by awarding various honours. For example, every year the city, through the construction and forestry sector, nominates 'Garden Urban Work Unit' and 'Green Model Urban Work Unit' at district and city levels. The best examples are entered for competition at provincial and national levels. However, greening practices within these areas are seldom performed by the organizations themselves. Usually, private consultants are invited to design and develop this type of green space (Forestry Bureau, 2006; Huang; Wang, Z., pers.comms.).

Greening efforts within these semi-private areas vary considerably between different organizations, depending on the interests of directors, budgets and available space. New residential areas have been developed by real estate companies in recent years. The developers who showed most interest in greening aspects have been motivated by the positive effects of a green environment on house prices (Chen, pers.comm.). More institutions and industries have put efforts into greening. Their motivation has included developing a good work environment, a better image for attracting human resources, and development of the tourism / service sectors within the institutions and industries themselves (Huang; Ji; Wang, Z., pers.comms.). The content and quality of these semi-public green spaces also varies a great deal, from mainly planting vegetation to developing areas into gardens or parks. When an adequate budget is available, an outdoor environment with design elements is appreciated (e.g. Ji, pers.comm.).

OUTCOMES OF URBAN GREEN SPACE DEVELOPMENT IN WEIHAI

Physical development

According to statistical data, the urban green space area *(yuan lin lv di)* of Weihai has increased greatly during recent years. Figures 5.5.6 and 5.5.7 show the area development of city's urban green space during recent times. Urban green space has increased dramatically since 1993, and public green space likewise increased significantly beginning in 1997. Between 1997 and 2006, the urban green space area more than doubled. Moreover, public green space area has more than tripled (*Overview table of*, 2007). Urban parks increased from 7 in 1997 to 16 in 2006 (see Table 5.5.3).

Until 2005, there were 7 types of urban green space *(yuan lin lv di)*, viz. public green space, residential green space, institutional green space, protection green space, production green space (mainly nurseries), road green space, and scenic green space (*Overview table of*, 2007). After 2006, Weihai city reformed the classification of urban green space, according to the national 'Classification of Urban Green Space' issued in 2002 (see Annex 5, Table A5.2). There are now 5 types of urban green, i.e. public park green space (the former public green space), production green space, protection green space, attached green space (including the former residential green space, institutional green space and road green space), and other green space (*Overview table of*, 2007). Public park green space includes public parks, green space squares, and small green spaces. Expansion of the urban green space area does not entirely reflect the outcome of greening activities through the years in question; when the city border was extended, for example during the early 1990s, some suburban protection forests (developed during much earlier) and scenic green spaces became part of the calculation of urban green space. This might explain the dramatic increase in Weihai's urban green space area in 1993 (Li, pers.comm.).

According to national standards, the urban greening status of a city is measured by 'green coverage percentage in built-up area' and 'public green space per capita'. 'Green coverage percentage in built-up area' includes all urban green space areas divided by the built-up area of a city. 'Public green space per capita' is public urban green space area divided by the urban population of a city. Although both urban population and built-up area have increased in recent years, the urban greening status of Weihai city has been improved (*Overview table of*, 2007; *Statistical data of*, 2002; Weihai Statistical Information Network, 2008) (see Table 5.5.3)

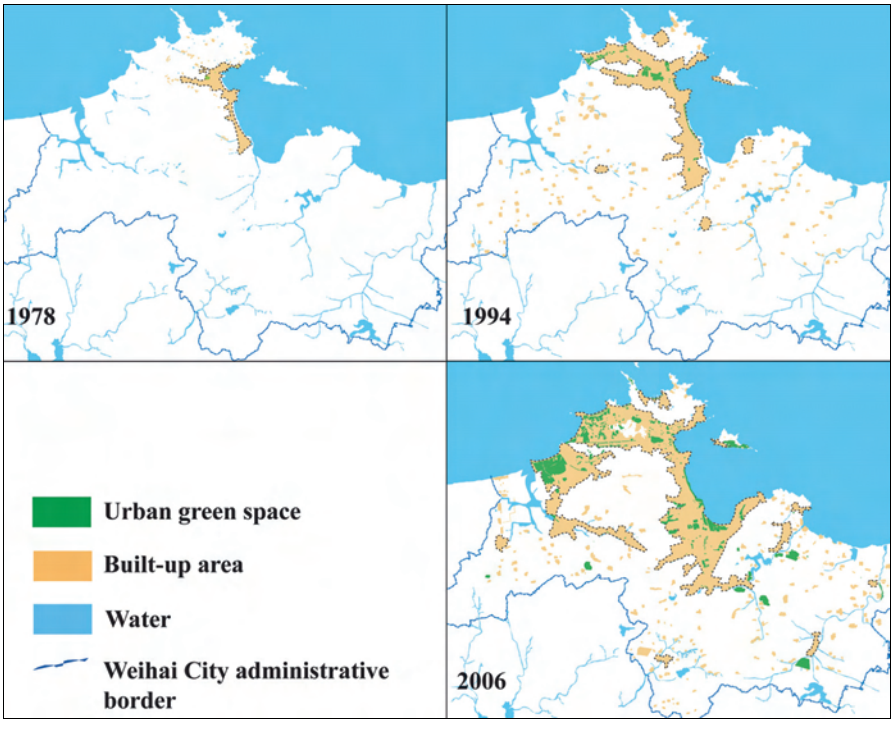


Figure 5.5.6. *Urban green space development in Weihai, 1978-2006.*
Sources: Based on Master Plans of Weihai 1978, 1994 and 2004; Urban Green System Plan 2006 (intermediate result); Huang, pers.comm..

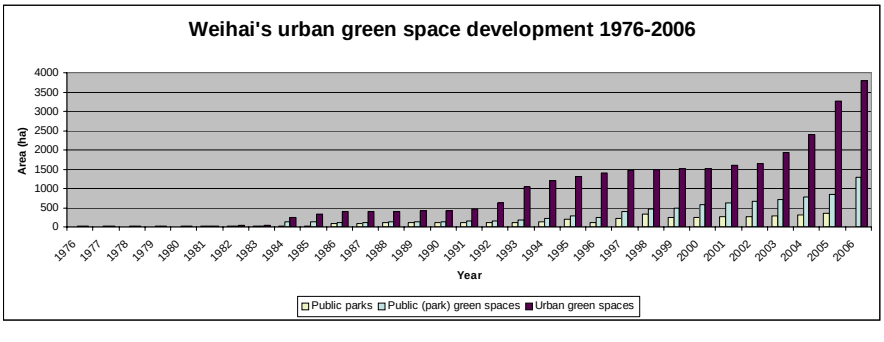


Figure 5.5.7. *Weihai City urban green space development, 1976-2006.*
Sources: *Statistical data of* (2002); *Overview table of* (2007); Weihai Statistical Information Network (2008).
Note: The classification of green spaces changed in 2006, and the area of public parks in 2006 was not provided.

Table 5.5.3. *Urban greening status in Weihai compared to development of urban area and urban population.*
Sources: *Statistical data of* (2002); *Overview table of* (2007); Weihai Statistical Information Network (2008).

	1976	**1981**	**1986**	**1991**	**1996**	**2001**	**2005**
Green coverage as percentage of built-up area (%)	16	18	31.58	33.6	37	39.06	45.11
Built-up area (km^2)	6	9	12.9	16.4	42.7	43.65	82
Public (park) green space per capita (m^2)	-	2.2	16.21	16	11.89	16.51	18.64
Total urban population (Million)	0.03	0.045	0.068	0.095	0.206	0.368	0.452

In 2003, Weihai Park Administration asked the Beijing Research Centre for Urban Ecology and Land, China Geology University, to investigate (using satellite remote sensing) Weihai's greening status within the built-up area of the city. The investigation was based on data from March 2003. The results suggested that Weihai's public green space covers almost 40% of the total urban green space, and public green space per capita was 12.6 m^2. Both were much higher than the norms for becoming a 'National Garden City'. The investigation also concluded that public green space was mainly to be found in the city centre and along the coast, and it was rather evenly distributed in both institutional green space and residential green space amongst the different districts. Road green space occupied 15% of total urban green space, and the study found the road greening process to have been outstanding. The investigation also showed that total urban green coverage percentage was 39.8%. The calculations did not include farmland and plantations, even though there are considerable areas of these lands within the urban developed area (China Geology University, 2004) (see Table 5.5.4 and Figure 5.5.8).

According to the interviewees, more public urban green space has been developed than the plans suggest. Urban green space development has exceeded both the Master Plan 1994-2010 and the Urban Green System Plan of 2002-2010 (e.g. Cai, 2004; Huang; Qi; Wang, Z., pers.comms.). The accomplishments of Weihai's urban green space development most often referred to are the newly developed coastal parks and the main city road green spaces. These were produced mainly through the key projects at the municipal level and large greening projects at the sub-municipal level.

Field observations during my study partly confirmed the results of interviews in terms of obvious development of coastal parks and road greening; they also provided further information. The park belt along the coast was very obvious. A series of parks combining the coastal roads underpins the coastline as a green-blue structural component of the city. Each stretch has a different character. Almost all of the parks included

sculptures for visual focus. The vegetation in the parks was highly cultivated; there were many flower beds for seasonal displays. Most of the parks provide exercise facilities, squares and recreational opportunities, but the use of the parks varies among different stretches. Some stretches were rarely used by residents (e.g. Liu; Wang, Z., pers.comms.; Field observations, 2004 & 2006). For example, most of Weihai Park is located far from residential areas, and, at least at the time of my study, the Coastal Road was not yet accessible by public transport. Both Weihai Park and the Coastal Road were not yet fully used for recreation. The maintenance level of the parks also varies, according to my assessment made during field visits. The pavements and facilities of some parks had already been damaged after only a few years from establishment.

The effects of major city road greening were also visible during the field visits. The main city roads were supplied with green strips in both medians and along the sides. The vegetation close to the road had a strong ornamental character, for example flowering and coloured foliage shrubs, as well as seasonal herbaceous flowers. Along some stretches, such as Western Wenhua Road, meadows were used along the roadside. Along other stretches, afforestation measures were used to develop roadside green belts. At the corners of the roads, small green spaces were developed with recreational facilities, but very few people used them. Another strong character of road greening in Weihai was that almost all city roads were bordered with roadside trees. The greening approaches, such as using ornamental plants and twin lines of roadside trees had also been used for main roads in natural landscapes, for example Huanshan Road (in the mountain) and Huanhai Road (along the coast).

Table 5.5.4. *Result of the remote sensing investigation of Weihai's urban greening status in 2003.*
Source: China Geology University (2004).

Types of urban green space	**Area (ha)**	**Percentage of total urban green space (%)**
Public urban green space	670.5	39.2
Residential green space	109.6	6.4
Institutional green space	224.9	13.2
Protection green space	328.3	19.2
Production green space	68.1	4.0
Road green space	256.5	15.0
Totals	1707.9	100.0

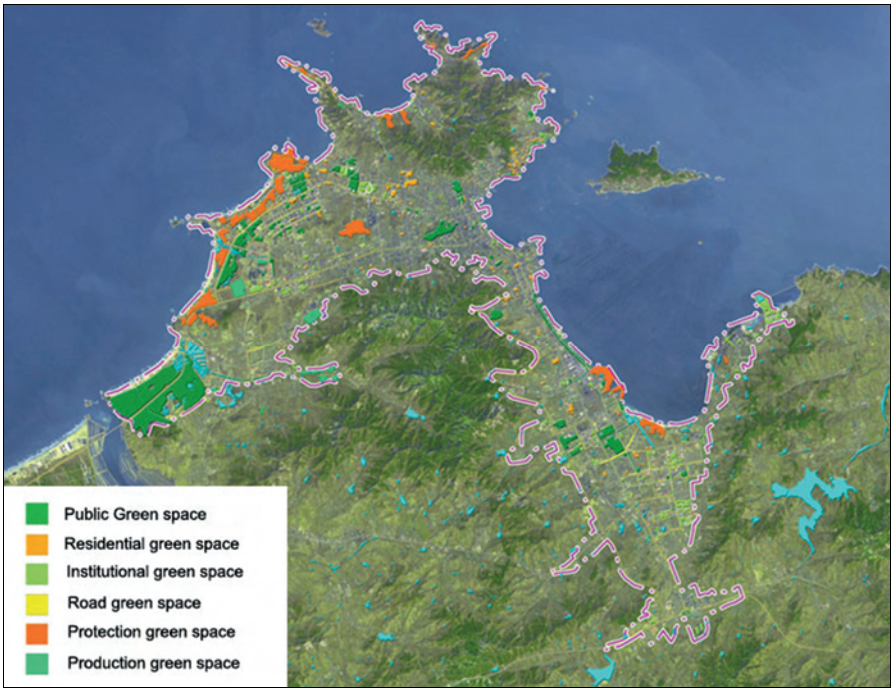


Figure 5.5.8. *Weihai's urban greening status within the built-up area; assessment based on remote satellite data of March 2003.*
Source: Based on illustration in China Geology University (2004).
Note: Boundary lines for this investigation (built-up area of the city) are in pink. Water bodies are turquoise.

There was a tendency for reduced use of some other types of urban green spaces in comparison with the new coastal parks and main roads. Many interviewees mentioned that the residential areas they lived in had an insufficient green spaces (e.g., Hu, X.Y.; Wang, X.G., pers.comms.). I observed during the field trips that old parks in the inner city were little maintained and appeared to be 'left-over' places. Mountains / hills and forests had not been fully managed by the city as recreational green resource, though they were being improved through afforestation activities. According to some interviewees, greening of many barren hills within the city has been a tremendous success in recent years (Li; Huang; Wang, X.G., pers.comms.). I was observed that many small hills close to the city and villages were newly afforested. Most mountain areas lacked access and were not much used for recreation. However, there had been some bottom up activities whereby local villages had transformed the newly afforested hills into local parks.

The parks, protection forests and mountains along the coastline compose a very clear coastal green belt (*The traffic and*, 2006). In addition to public parks development, other types of urban green spaces have increased in accord with the urban development. The aerial image shows that the new zones (High-tech Zone and Economic Development Zone) in general have a good green coverage (*Land use dynamic*, 2002). It also shows that many of the low hills or extensions of the hills have good green covers and are well integrated with the city structure. The intervening road green belts are also clearly seen in the photo. Like webs, they make links among the mountains, small foothills, parks and small green spaces.

The impact of green space development on the city and its people

Socio-cultural aspects

The most obvious benefits Weihai gained from urban greening have been socio-cultural, especially those related to city image and recreation. Most interviewees expressed considerable satisfaction with the improvement of the city image through urban greening in recent years (e.g. Er; Hu, X.Y.; Wang, X.G.; Zhang, Y.Z., pers.comms.). Many of the national honours (see Section 5.1 "Introduction of the city") that have been granted to Weihai City in recent years are because of its urban greening process. Many city key projects have had a clear goal of improving city image. The honours granted have in turn promoted the urban greening process even further. The upgraded city image has probably contributed further to national and international cooperation and competitiveness and, thus, also had an economic impact (see below). Weihai now hosts many national and international conferences and activities. For example, since 2004 the China International Habitat Festival has been held in Weihai every year. In 2007, the standing office of 'China Human Habitat Environment Price' was permanently located in Weihai (*The Standing Office*, 2007). Many interviewees also mentioned that the good city image of Weihai gave them great psychological contentment for living and working in the city, as well as confidence for communicating with people from elsewhere (e.g. Wang, X.G.; Wu; Zhang, Y.Z., pers.comms.).

Most interviewees mentioned that green space development in recent years had improved recreational conditions in Weihai. Although Weihai has a very good natural environment, it had very few public recreational spaces when it obtained the 'National Garden City' title in 1996 (e.g. Du; Huang, pers.comms.). The newly developed coastal parks and city squares have provided more opportunities for daily and weekend recreation. After the development of several large parks, citizens stated that they really feel that they have places to go if they have time (e.g. Er; Shi & Sun, pers.comms.). However, many interviewees considered the green space close to where they

live as being inadequate. Residential green space was not well-maintained (e.g. Er; Hu, X.Y., pers.comms.).

Ecological aspects

There have not been many studies about the impact of urban green space development on Weihai's ecological environment. The investigation of Weihai's urban greening status in 2003 mentioned above included an analysis of Weihai's heat island effect. The results suggested that Weihai's heat island effect was very weak. Only very few areas in the city centre had elevated temperatures. The analysis attributed this generally good situation to the well-developed urban green space of most parts of the city, as well as to the city's coastal urban development pattern. The rich green resources in several built-up areas had well moderated Weihai City's heat island effect (China Geology University, 2004).

Some interviewees thought that Weihai already had very good natural conditions with its surrounding mountains and coastal climate; man-made green spaces were actually a very small part of the city's overall green cover. Therefore, the impact of green space development on environmental conditions has not been very obvious (e.g. Du, pers.comm.). Most interviewees believed that the urban greening process must have contributed positively to Weihai's ecological environment (e.g. Wang, Z., pers.comm.). For example, the coastline has gained much attention and better management by developing urban green space for recreation and tourism. The water surfaces close to the coastline were maintained as integral parts of the parks. It was assumed that the ecological condition of the coastal areas had been improved (e.g. Liu, F.T., pers.comm.). Positive impacts of green spaces on the ecological environment were also observed during the field visits. The new vegetation belts along the coastline provide valuable habitats for wild animals. For example, many birds were observed in the southern part of Weihai Park where there is a high percentage of tree cover and multi-layered vegetation.

Negative impacts on the ecological environment were also speculated upon by the interviewees, as well as by the researcher during the field visits. Some landscape architects and planners worried about the approach of developing coastal parks by intensive infilling of the sea. Huang (pers.comm.) stated, for example: "The bay has become smaller and smaller in recent years. It must affect the local ocean ecology within and near the bay". Even though the landscape architects understood that transplanting large trees might lead to deterioration of the environment from which the trees had been removed, it had always been an acceptable practice in Weihai (e.g. Tian; Wang, Z., pers.comms.). Transplanting large trees was still observable, especially in city's key project sites. Moreover, many urban green space and urban infrastructure developments were directed towards

visual effects, instead of protection of natural landscape resources. Establishing urban green space relied more on high-tech than on natural processes. This raises questions about whether developing new urban green space has been achieved at the cost of some natural green spaces, and whether using high-tech for urban green space development is cost-effective from an ecological perspective.

Economic aspects

According to some planning experts, economic development is related to many factors, so it is difficult to calculate the effects of urban greening aspects separately (Guo & Zhao, pers.comm.). It was generally believed that urban greening has had a positive impact on economic development. For example, tourism had benefitted directly from urban green space development (e.g. Hu, X.Y.; Huang; Pang, pers.comms.). Along with the improved city image and reputation, international and national investments had increased in Weihai (Weihai Municipal Government, 2007). Moreover, the positive impact of green spaces on house prices has been clearly observed (Chen; Hu, N.; Liu, pers.comms.). However, doubts have been raised about intensive urban green space development in relation to available capacity and sustainability of the city's economic circumstances. The ordinary citizens interviewed were not satisfied with the redevelopment of the same sites over and over again. They were critical about urban green space development as projects had been too expensive (Shi & Sun; pers.comms.).

Structural aspects

Urban planning and green system planning policies in recent years have generally safeguarded the mountain areas and the coastline areas from urban expansion. Urban greening activities have underlined the main green structure of Weihai city. The existing examples of green space development along the coastline and in the mountain areas continually give inspiration to similar future developments. It can be generally assumed that urban green space development does have a structure role in controlling and directing urban development in Weihai.

SUMMARY

This section introduced the main activities and outcomes of the urban greening process in Weihai, focusing on the past ten years (1997-2006). At the city level, the government (through the construction sector) has put most effort and financing into development of public parks along the coast and into greening the major city roads. There have also been efforts, be it on a smaller scale, to improve other types of urban green space, for example small parks and green spaces, green spaces in residential areas and green

areas along rivers. The city government, through the forestry sector, has also undertaken a large afforestation effort throughout the local environment, mainly based on the ‘duty-tree-planting’ policy. At the local level, there have also been increasing activities to develop local public green spaces, residential green spaces and institutional green spaces. Urban greening activities have produced many urban green spaces. From 1997 to 2006, the area of urban green space of Weihai more than doubled, while the area of public green space more than tripled within the overall green space resource. The urban greening process has generally had a positive impact on the city and its people; it has especially improved the city’s image and its conditions for recreation.

6. DISCUSSION

6.1 Introduction

The main objectives of this study were to gain insight into the role, planning and management of urban green spaces in relationship to urban planning and development in contemporary Chinese cities. In particular, I sought to identify the achievements (of) and barriers to green system planning and its implementation, and to compare the current Chinese approach to planning with the European green structure planning approach; this comparison was undertaken in order to identify where the two approaches could benefit from one another. An in-depth case study was undertaken in the city of Weihai to enhance this understanding.

Through an overview of current western theories of urban green space planning for sustainable development, with European green structure planning approach as particular focus (see Chapter 2, 'Theoretical framework'), four principles were identified as key elements of current western theories of urban green space planning: 'multi-functionality', 'integration', 'communication' and 'strategic (long-term oriented) approach'. Since these four principles, together with their theoretical bases, were the 'lenses' through which I examined urban green space planning in Weihai, the interpretation and discussion will be developed around them.

After this section's introduction, section 6.2 will discuss the methods and limitations for this dissertation project. The subsequent four sections will be devoted to the four principles mentioned above. For each topic, the discussion will be mainly based on findings from the investigation of urban green space planning and development in Weihai. Section 6.7 then discusses several underlying issues of urban green space planning and development, with perspectives from the Chinese socio-cultural and planning contexts. Western urban greening space planning theory and practice are also used as perspectives for discussing these underlying issues. Section 6.8 will, at a more general level, discuss some major commonalities and differences between the approaches of Chinese urban green space planning and European green structure planning.

6.2 Discussion on methodology

Before discussing the findings of this study in greater detail, this section will reflect on the methods applied during this study to show their efficacy and their limitations.

CASE STUDY APPROACH

A case study approach was the major research strategy. In particular, the study has followed an 'embedded case design'. In general, the research strategy and research design were suitable for understanding the current approach of urban green space planning in China within the context of an international discourse on sustainable urban development. A case study (with one in-depth case) has helped relate the international and Chinese theoretical discourses on urban green space planning to the complicated real-life context of rapid urban development in the country. By looking at concrete green projects, the 'embedded case design' has contributed especially to a better understanding of the relationship between urban green space planning and urban development in practice (implementation). The investigation of Weihai's urban green space planning and development showed that including the level of green projects enhances a discussion of urban green space planning in the real urban development context. For example, when talking about urban green space planning in Weihai, most interviewees based their reflections on concrete green projects.

Related to the issue of generalization, the single case design also had its limitations. Choosing a case city that would allow for generalization was a challenge. Although neither a typical nor a critical case, Weihai does successfully provide important insights into the green space planning issue in China. The study showed that Weihai's planning discourse, at least at the statutory planning level, is in line with the Chinese national urban green space planning discourse. It can be assumed that the Chinese top-down planning system leads to application of similar approaches to urban green space planning and development across cities. Thus, the results of the study in Weihai likely represent, at least partly, the general status and challenges in the issue of urban green space planning in the country. Further investigation of urban green space planning issues in other Chinese cities would have improved the validity of this study's results. However, it should be noted that the PhD study was undertaken from a Danish university. Because of the distance and the time and resource constraints, this type of wider investigation could not be included in the study.

Theoretical study of urban green space planning for sustainable development, and an overview of the Chinese context for urban green space planning have both proved crucial for this project. The former resulted in the framework and perspectives for the case study of Weihai, while the latter provided further insight into reasons why things happen the way they do in Weihai. The study did not include an in-depth case study in Europe. Thus, the understanding of the European green structure planning approach is mainly based on literature and on the researcher's earlier experience. This to some extent limits interpretation of the study, for example when reflection

based on real-life circumstances is necessary. However, since in Europe most literature about green structure planning provides concrete cases, this has, to a certain degree, helped improve in-depth understanding of the issues. In addition, several years' study and research experience within the European context that has shaped green structure planning significantly enhanced my understanding of this approach.

DATA COLLECTION AND ANALYSIS

This study mainly adopted a qualitative research approach. For data collection and analysis, the study did not include any public survey or quantitative measurement of the physical landscape. To improve the internal validity and accuracy of the investigation, the study adopted a process of triangulation through various data from three main sources: planning documents, interviews with key actors, and field visits/observations by the researcher.

There were particular data limitations, especially among the planning documents available in Weihai. In spite of help from the Park Administration of the city, the accessibility of planning documents proved to be limited. Moreover, several older versions of Master Plans are missing. Therefore, the historical analysis of planning is partly based on earlier analyses by other planners. Aerial photographs of Weihai exist only for recent years, so the historical analysis of urban green space development was mainly based on the existing maps in various versions of city plans, with additional cross-checking of information with key persons. Throughout the process, it was found that even the existing maps have accuracy problems. Different versions of maps do not 'jibe' with one another, and information on the maps did not always represent the facts at a certain time. The planners for the Urban Green System Plan of Weihai 2002 expressed similar comments during interviews indicating that Weihai lacked cartographic information on urban green space. The planning process necessitated development of these maps. However, proper mapping of urban green space needs continual effort on the part of the city (Guo & Zhao, pers.comm.). Because of the weaknesses of 'hard data', the interviews and field visits/observations contributed to filling the many information gaps.

In total, 35 interviews were conducted. Due to the large distance to the case city from the researcher's base in Denmark, the interviews were not conducted on a wider scale, and interviews with the citizens were limited. However, the available interviews provided valuable insights into both discourse and process of green space planning and development in Weihai. The investigation showed that opinions of the interviewees on certain issues were rather disparate. Generally speaking, different views exist between different actor groups, for example, between leaders, government employees with professional knowledge about green space and planning, actors in

private firms and ordinary citizens. Different actor groups have different knowledge levels and different needs for urban green space. Including a broad spectrum of actor groups in the investigation was successful in gaining a balanced interpretation of problems and challenges facing urban green space planning in Weihai.

The information gained from the field visits/observations added great value to the analysis. It strongly supported understanding of the real meaning of a planning discourse written in planning documents or verbally delivered by the interviewees, both in a physical urban setting and in an organizational planning situation. In addition, I found that written and verbal discourses could be quite different from reality. For example, planning documents and interviewees often mention 'ecological urban green space'. In reality, these green spaces are often intensively managed and have little consideration of ecological function.

FRAMEWORKS FOR ANALYSIS AND ASSESSMENT

The analysis of this study was based on the analytical framework 'goal, actors & process, and outcome & impact'. When this framework was developed, the intention was to make the analysis more convenient; at the same time, there was awareness that these three aspects and the separation between them might be arbitrary. The analysis process of this study demonstrated that these three aspects are inter-related and often refer to one another. For example, when analysing the interviews for the goals of green space development, the interviewees often reflected on the green spaces developed in reality (i.e. on outcome). Nevertheless, the framework proved useful for presenting results of study on the phenomenon of urban green space planning and development, and to display the causal links between statutory planning and implementation.

At a more detailed level, assessment of the status of urban green space planning and development was based on a framework of 'principles', which were developed from the approach of green structure planning that has emerged in some European countries, and which are considered prerequisites for successful green space planning. The study process showed that these principles were useful 'lenses' allowing me to study green system planning in Weihai and identify issues connected to its successes and failures.

During the theoretical development process, an attempt was made to develop a set of criteria and indicators for each principle; they are presented in part within the description of the benefits of urban green space (see Chapter 2, Section 2.2). The investigation process demonstrated that the criteria, especially the indicators, were too detailed for this study, which was not intended to produce a detailed assessment of a selected green function. However, knowledge of some criteria has helped me make interpretations and judgements during the investigation.

6.3 Multi-functionality of urban green space

The principle of 'multi-functionality' suggests consideration of the whole set of functions and benefits of urban green space, including ecological, socio-cultural, structural and economic aspects, and combining different functions and uses whenever possible for single green spaces as well as green structure. This section will discuss the multi-functionality aspect of urban green space, based on the investigation in Weihai. First, some gaps between urban greening statutory planning and practice will be clarified within the context of urban green space multi-functionality. Subsequently, the gaps will be discussed from three perspectives: the focus on city image and visual effects of urban green space, neglect of ecological, structural and other functions of urban green space, and the lack of project level consideration of multi-functionality.

GAPS BETWEEN STATUTORY PLANNING AND URBAN GREENING PRACTICE

In Weihai, the multi-functionality of urban green space, i.e. integrative attention given to different functions of green areas, is present more in the discourse on statutory planning than in green space development practice. 'Multi-functionality' refers more to consideration of various functions of urban green space at city level than to the combination of various functions of urban green space in one specific urban green space. In the recent Master Plan and Urban Green System Plan, various functions and benefits of urban nature and urban green space were considered generally and integrated into a vision for a better urban environment. However, from information obtained through interviews and field visits, it was apparent that only a few functions of urban green space (e.g. contributing to city image and recreational functions) had been taken into consideration in urban greening practice. For example, recent key city projects have been mainly to develop coastal parks and road greening. It seems that important discourses on urban green space planning – for example the structural functions – are 'forgotten' when it comes to green space development practice. The planning concepts that do make it through to the implementation phase are often much reduced in importance or changed, for example the ecological and recreational functions.

Another obvious difference between statutory planning and practice relates to the geographical area and types of green spaces considered. In the recent Master Plan and Urban Green System Plan, urban green spaces both within the city and in the urban surroundings were considered. In addition to public parks in the city, the natural landscape, mountains and water (the coastline) within and around the city were taken into account as main symbols of 'the ecological environment' and 'the characteristics of Weihai'. The plans suggest protecting and making use of the natural landscape by

defining protection zones, creating visual corridors between the natural landscape and the cityscape and developing forest parks. However, green space development in Weihai is concentrated within the city, and particularly along the coastline and the main roads. Management and development of other types of urban green spaces, such as mountain areas within and surrounding the city, existing urban woodlands and protection green space, have not been prioritized. Afforestation is the main approach to urban greening of the surrounding areas. However, the recreational values of these forests are limited as only few areas in the mountains have been developed by sub-municipal authorities and entrepreneurs for this purpose.

The study brought ample evidence that there is striving for multi-functionality in theory, but not in practice. Because of space constraints herein, it is impossible to discuss all green space functions and benefits in full. Instead, three main issues are discussed. First, the most obvious character of Weihai's urban greening centres around one main function only, viz. the pursuit of a better, 'green' city image with strong emphasis on visual aspects. Second, this focus has undermined consideration of other functions and benefits of urban green space that are ecological, recreational and structural in nature. Third, because multi-functionality is less emphasised at the project level than at the city level, combining various functions has been neglected during green space development. Based on these three issues, the following three sub-sections discuss reasons why the objective of creating multifunctional urban green space has not been transferred from planning concepts to green space development practice.

Focus on city image and visual effect

At the current stage of urban development, economic growth is the overall goal and driving force for various urban policies and action in Weihai. After years of searching for the path to economic growth, the development strategy of Weihai has gradually become clear: based on its good natural environment, the city is branded as a city 'suitable for living in' and for tourism. It is hoped that with such a city image, Weihai can improve its reputation among Chinese cities in the tough competition for investment. This strategy of branding the city through a good urban environment has benefited from city beautification campaigns taking place at the national level during the recent years, for example the awards of 'National Garden City' and 'National Good Human Settlement'. Prioritizing the value of urban green space for city image in this way has been a great success as part of Weihai's overall urban development strategy. Weihai has indeed raised its profile among Chinese cities in this way. According to the citizens, the improvement of the city image has also had a positive effect on their feelings of confidence and social belonging (e.g. Wang, X.G.; Wu; Zhang, pers.comms.).

The city leaders' longing for prestige also leads to promotion of city image. In the Chinese political system, officers in government organizations are appointed from above. Their performance during their tenure is closely related to future career advancement. Furthermore, 'to bring benefit to the people' is a motto for Chinese Communist Party officers. To achieve some 'good deeds' during their tenure is a matter of prestige. The city leaders are often devoted to a key city project during their tenure. Their personal tastes and decisions influence the entire project process. Among urban projects, public green spaces within the city, especially public parks and green space along the city main roads, are believed to be most effective for promoting city image and leaders' prestige. In addition, many green space developments are arranged before high level official visits to Weihai. Which route the visitors will drive through and where they visit will all influence decisions about which location should be beautified before the visit. Citizens call these projects 'face/prestige projects'. Therefore urban projects become a focus of city leaders.

From the interviews and field visits it became clear that the pursuit of city image results in urban green spaces with strong ornamental characters in Weihai. Often the criterion for a good urban green space is that it should look good, while functionality comes second. As a result, luxurious pavement, many sculptures and exotic plants are intensively used in urban green space. Examples of this are the large scale squares and sculptures in the parks along the coast, as well as the ornamental vegetation belts along the city main roads. The influence of the Chinese garden tradition should not be neglected, as this has also emphasised visual and ornamental aspects of green space.

In theory, the pursuit of city image does not necessarily lead to a strong ornamental character in urban green space. The causal link in Weihai might also reflect the influence of cultural preference on urban green space design. In Weihai, elements in urban parks and green space are no longer limited to those of the old days. New materials and western design are also appreciated. But some basic principles of Chinese garden tradition and related aesthetic preference can still be recognised in current green space development. The focus on visual effects may be related to the strong tendency of seeking picturesque scenery in classical Chinese garden design. The intensive use of ornamental elements is linked to the tradition of including famous scenery within a relatively small garden space. Creating visual foci with sculptures and single old trees may relate to the traditional practice of creating scenery with single elements. Using sculptures indicates cultural links to the garden tradition of seeking for meanings behind the scenery.

Reduced attention to benefits other than image promotion

The pursuit of city image, especially through providing visual effects, is often the predominant (sometimes the only) reason to prioritize a green project. Less attention is paid to other functions of urban green space.

The interviews revealed that landscape architects in Weihai tend to have a stronger awareness of the ecological functions of green space than many other professions and actors, whereas planners emphasize the values of the natural landscape and urban green space for structural reasons. City leaders are rather concerned with the city image as discussed above, and the general public is more interested in recreational opportunities and other benefits related to their daily life. Since the city leaders' decision influences most of the outcomes of actual green space development, it is no surprise that functions which represent other actor group interests get less attention during development. An example is the planning of Huanhai Road 2nd stage, for which objections by landscape architects (because of the impacts on natural beauty and ecology) had little influence on the final decision (e.g. Wang, Z., pers.comm.). Overall, many interviewees expressed their concern about the condition of the outdoor environment close to their homes, even though the 'face' of the city had been much improved (e.g. Hu, X.Y; Wang, X.G., pers.comms.).

Specific functions of urban green space rely on specific knowledge to develop instruments and tools for green space planning and development. For example, to promote the ecological functions of urban green space such as enhancement of wildlife, climate and hydrological functions requires knowledge of ecosystems. Although planners and landscape architects have some understanding about these functions of urban green space and try to put these ideas in the plans, they lack the required in-depth knowledge and information about ecological functions (biodiversity, climate, hydrology) of green space to provide operational measures and tools in the plan for realising these functions in planning practice. This is also true of green space development practice, which is mainly carried out by the green sector (primarily landscape architects). The existing knowledge and resources within the green sector are far from sufficient for developing new measures during the often hectic implementation stage of green projects. As one of the local landscape architects exclaimed: "we lack technical support (both 'software', in terms of measures, and 'hardware' in terms of materials) to promote, for example, the ecological functions of green space" (e.g. Tian, pers.comm.).

Moreover, since greening efforts are often expected to be visible in a short time, the time frame set for green space planning and development does not allow for the realization of a full scale functions and benefits analysis of urban green space. As a result, more effort is put on functions that can be implemented quickly, and the ecological functions, structure

functions and social benefits that take time to realise are neglected. This aspect will be further elaborated in the discussion of the 'long-term' principle.

Lack of consideration of multi-functionality at the project level

The interviews and field visits revealed that Weihai city authorities tend to prioritize public park green space and road green space within the city. Their related city image and recreational functions are improved, but their ecological functions and structural functions are not much promoted. The natural landscape and green spaces in the city surroundings are seen as 'ecological and structural green spaces' and are supposed to be protected. Multi-functionality of urban green space makes most sense at a city region level. However, in reality, little attention is given to these functions, so the surrounding green space is not prioritized for management and development.

The limitation of the Chinese statutory planning approach also leads to weak multi-functionality performance during green space development practice. According to the Chinese 'Standard for Classification of Urban Green Space', different types of urban green space are supposed to represent different functions (*Standard for Classification*, 2002) (see also Annex 5, Table A5.2). This approach can be seen clearly in Weihai's Urban Green System Plan 2002, which has developed separate plans for different types of urban green space, for example a Plan for Public Parks and a Plan for Ecological Landscape Green Space. In other words, a specific green space is defined in the plan by the type of green space it represents, thereby delimiting its main function. This is part of the reason why many green space functions are neglected for a specific green space.

Sometimes, multifunctional green space is encouraged in the plan, but subsequently neglected during green space development. The plan for each type of green space suggests both quantitative and qualitative goals. In the implementation, quantitative goals are taken more seriously than qualitative ones. For example, the plan for residential green space suggests 35% (or more) green coverage percentage and considers providing daily recreation, socialising opportunities, as well as ecological aspects (*Urban Green System*, 2002). During development, the 35% green coverage percentage is easy to evaluate and control. The suggested qualitative aspects are not followed fully. For example, residential green space is usually developed for daily recreation purposes. However, the ecological aspects are neglected. The criteria for controlling and assessment of these qualitative aspects are also used flexibly in the planning and management process (e.g. Huang; Wang, Z., pers.comms.).

6.4 Integration aspect of urban green space planning and development

According to the 'integration' principle (see Chapter 2), green spaces at different scales should be optimally connected, a green space should be seen as an integrative part of a broader, overall green structure, and the urban green structure should have an integrative relationship with other urban structures. Integration aspects have implications at all levels, i.e. those of policy, planning, organization and development practice. Based on the investigation in Weihai, this section discusses how the 'integration' component is dealt with in the Chinese context, and the extent to which the 'integration' concept is relevant to urban green space planning and development. First, the relationship between urban green system planning and urban planning is discussed. Subsequently, integration aspects within statutory urban green system planning are tackled. Finally, integration aspects during urban green space development are discussed from two perspectives, namely those of project-based development and of decentralized power over urban green space.

URBAN GREEN SYSTEM PLANNING AND URBAN PLANNING

Based on the Chinese planning system (see Chapter 4), Weihai's urban green system planning is a sectoral part of urban planning. Theoretically, the Urban Green System Plan is an integrative part of the Master Plan. However, investigation of the planning process and planning documents showed that they are far from integrated. If there is any integration between the two, it is from one direction only, i.e. urban green system planning falls within the framework defined by urban planning, and not the other way around. This relationship can be recognised from many aspects. The Master Plan needs to be developed first by urban planners, after which the urban green space planners develop an Urban Green System Plan based on the Master Plan. The Master Plan defines the overall urban development strategy and land use. The Green System Plan represents a more detailed plan for urban green space, but the overall framework is defined by the Master Plan. The two plans are not necessarily part of a continuous planning process. Weihai's Urban Green System Plan 2002 development was based on the Master Plan of Weihai 1994. It is clear from the time difference that the Urban Green System Plan can never be an integrative part of the Master Plan. They are actually two independent planning documents, made by two different planning teams.

In Weihai, urban green system planning has a low status compared with urban planning. For example, planners who develop the Urban Green System Plan obey the general principles settled by the Master Plan. According to the planners of Weihai's Urban Green System Plan 2002, they were provided with very little flexibility to develop a good green system

plan, since many things were restricted by the Master Plan (Guo & Zhao, pers.comm.). This situation did not improve during the planning process of the new version of urban green system plan starting in 2006 (Wang, Z, pers.comm.). The separate processes of urban green system planning and urban planning bring many challenges to green space planning and development. Urban planning can coordinate various types of sectoral planning. Since urban green system planning always comes after urban planning, the possibility of integrating urban green system planning with other sectoral planning is also limited. In addition to the Urban Green System Plan, Weihai also has a sectoral Traffic Plan, based on the Master Plan 1994. Planning documents show that there is actually no integration and coordination between these two sectoral plans.

INTEGRATION WITHIN URBAN GREEN SYSTEM PLANNING

Within urban green system planning, integration between different types of planning and development has not emphasized, although some basic ideas for integration between green structure and other urban structures may be recognized. Weihai's Urban Green System Plan 2002 mentions as a principle that various green spaces with different functions and different ownerships should 'co-exist'. It is suggested that the urban green system be well-integrated with the existing natural conditions, city form and the history and culture of the city. Integration between urban green space and connected built-up structures and infrastructure is generally encouraged. It is also suggested that the planning and development of residential green space need to consider, from the start, integration of architecture and green space. Moreover, institutional green space needs to be integrated into the surroundings, including roadside recreational green space and roadside protection green space whenever possible. Another example is the Roadside Green Space Plan (a chapter of Urban Green System Plan of 2002) which suggests development of greenways for cycling and walking to reduce traffic pressures and bring social benefits. This reflects some form of thoughtful planning for traffic in the green system plan and thus of sectoral integration. The Ecological Landscape Green Space Plan (a chapter of Urban Green System Plan of 2002), on the other hand, includes consideration of planning for tourism and protection of the coastline and its wetlands.

As shown in Weihai's Urban Green System Plan 2002, the Chinese green system planning approach partly contributes to integration between green space and other urban structures mentioned above. In its approach, urban green spaces are categorized into different types, for example public green space, roadside green space, residential green space, institutional green space, protection green space and production green space (see Annex 5, Table A5.2). Urban green space is attached to various land use types, including buildings and infrastructure. Therefore, integration is achieved in statutory

planning by ‘attached urban green space’ connection to built-up areas and infrastructures. In this way, planning and development of a certain green space needs to respect the urban functions it serves. However, the fact that these different types of green space are planned separately to achieve their respective quantitative criteria presents a stiff challenge to spatial integration and connection (between different types of green space); these integrative aspects are easily neglected.

The spatial integration between urban green spaces at different scales is encouraged by Weihai’s Urban Green System Plan 2002. Even though this plan focuses on areas within the city, the connection between urban green structure and the surrounding natural landscape is considered. The plan also suggests using a ‘green line’ and ‘green stamps’ to ensure that green spaces as parts of the green system will be well integrated into the overall green system. It is also suggested that, in order to achieve unity and continuity of the urban landscape, building design should be integrated with the design of its surroundings. Integrated design for a whole street, building blocks, and cultural/business areas is encouraged.

From a planning and policy perspective, the integration of the overall planning concepts and policies is better in ‘vertically’ (integration from national to local level) than ‘horizontally’ (planning integration between different sectors). Most of the recent planning discourses at the national level can be recognised in Weihai’s planning discourse, for example the emphasis on protecting ecologically sensitive areas. Many of the greening actions in Weihai are actually in response to the call from sectorally responsible offices at the national and provincial levels, for example to construct a ‘National Garden City’. In the Master Plan, there are sectoral plans that deal with some major planning issues, such as the Traffic Plan and Urban Green Space System Plan. Sectoral plans within the Master Plan are better integrated. After the city plan is drawn up, different sectors with different planning teams elaborate more detailed sectoral plans. These independent sectoral plans are not well integrated. This situation is related to the Chinese planning system and the particular organizational structure of planning. Within the same sector, policies can easily be delivered and understood through the hierarchy, while greater efforts are needed to reach an understanding between sectors on a certain issue. This will be further discussed in the section on communication aspects of urban green space planning in Weihai.

Although vertical integration of planning concepts appears to be possible from national planning level down to municipal planning level, planning concepts are not much integrated at the sub-municipal planning levels and especially the project level. This may be due to the fact that the focus of urban green system planning is on statutory planning, but not on urban green space development in practice. Urban green spaces are often developed

individually without consideration being given to the higher level planning context.

PROJECT-BASED DEVELOPMENT

In addition to public parks, urban green space is developed together with residential areas, public buildings and new roads. From this perspective, the planning approach of 'attached green space' has strengths at the implementation stage. The strength of project-based development can also be seen in the work of the Project Director Committee when a large project or a key project is constructed. The Committee plays a positive role in coordination between different sectors, and therefore contributes to integration between green space, built-up structure and infrastructure (Hu, N.; Liu, T., pers.comms.). There are also signs of increasing integral architecture and outdoor environment design from the early stages of projects (Tian, pers.comm.).

However, project-based green space development in Weihai also results in limitations for integration between green spaces. Green space development is not always in accordance with the overall plan. When the decision is taken to develop a specific green space, strong focus is put on this single green space throughout the design and construction process. The neighbouring green spaces or potential developments in the future are not always thoroughly considered. For example, the green space development along the coastline and road greening do reflect the overall concept of developing a continuous green structure. As can be seen from city maps, Weihai has developed a park belt along the coast. However, a closer look at the sites showed that the park belt has not achieved integration in a real sense. Different green spaces are still independent from one another and lack physical and functional relationships. For instance, in the design concepts for the residential area 'Haishang Mingzhu', the green space in the residential area is supposed to link to the neighbouring parks. However, in reality, the residential area is enclosed by walls. As a result, the residential area and parks are actually separated spaces and have different functions, even though they are almost connected (see Annex 6).

Yet there are also good examples of integration between green spaces at the project level, such as the development of the International Conference Hall. Its green space has been connected to the surrounding green spaces. Since Qingdao Road was under redevelopment during the same period, connection of the green space of the International Conference Hall and the roadside green space of Qingdao Road were developed in an integrated manner. This was possible as both projects were conducted by the city. For institutional green spaces developed by the private sector, integration with surrounding green spaces is more challenging, as private owners tend to enclose their green space and consider their territory only.

DECENTRALIZED POWER OVER URBAN GREEN SPACE

Decentralized power over urban green space is another reason for lack of integration between green spaces and their development. Responsibilities for various green spaces are divided between different zones and different sectors of government. Different zones and different sectors have independent administrative measures as well as different professional approaches to manage and develop urban green space. For example, the Forestry Bureau applies a traditional forest management approach focusing more on afforestation and protection of existing vegetation resources, while the Park Administration concentrates more on visual effects and recreational functions of urban green space. If there is insufficient communication between the sectors and zones (as is often the case), urban green spaces become 'isolated' and fragmented. It should be mentioned that sometimes the operation of a key project contributes to integration when a project span different zones and different sectors. The City Construction Committee and the City Council have the power to coordinate this kind of project. A road greening project, for example, typically covers several districts and zones. Even in this case, it is not easy to achieve integration in a real sense. This has emerged clearly from field observations: different greening approaches can easily be recognized in different stretches along one road.

6.5 Communication and participation in urban green space planning and development

Current western planning theories suggest that long-term oriented, multifunctional green spaces and a well-functioning integrated urban green structure cannot be realised without proper communication among different professions, nor without the involvement of stakeholders. This section will discuss the relevance of the communication and public participation aspect in the urban green space planning and development in Weihai. First, attention to communication and participation components of statutory planning are discussed. Subsequently, the discussion focuses on the role of communication and participation at the implementation stage.

COMMUNICATION AND PARTICIPATION AT THE PLANNING LEVEL

A communication approach to planning is not emphasised in the current statutory planning discourse in China (see Chapter 4) and especially not in Weihai (*Master Plan of*, 2005; *Urban Green System*, 2002). According to the interviews with the planners involved in planning process in Weihai, there is limited (request for) formal communication among different sectors (e.g. the Planning Bureau and Forestry Bureau) and different levels of government. If communication takes place, this happens relatively late in the planning process, and mainly within the public sector. The planning team

coordinates with the different sectors and different levels of government to exchange information and discuss relevant issues. Coordination and communication amongst responsible city leaders, the planning team, different sectors and different levels of government also take place through formal plan report meetings. Much informal communication does take place between city leaders, planners and landscape architects (e.g. Guo & Zhao; Liu, Q.; Xu, G. Y., pers.comms.). However, to a large degree, this communication is unidirectional: the leaders' opinions dominate decision-making.

As discussed above, communication within the public sector is better vertically (e.g., within a government sector, from national to local) than horizontally (between sectors or stakeholders). Probably due to the Chinese top-down political and planning system, the vertical ties in the professional system are very strong. For example, the Urban Green System Plan of Weihai should follow both national regulations and provincial criteria (e.g. respecting a 500 meter catchment area for recreation) as the Urban Green System Plan will be evaluated later at both levels. The strong role of national policy and regulations in the Chinese planning system and their implementation at lower levels promote 'vertical' communication. The situation is more complicated, however, in the special zones (e.g. Weihai's Economic Development Zone and Hight-tech Zone). The organizational structure of the special zones is more independent and at a higher administrative level in the hierarchy than normal urban districts. Although they need to obey national and provincial regulations, they have more decision-making power over their internal issues. The City Park Administration does not have the power to supervise greening issue of the special zones. This causes challenges for communication during the planning process.

For both the Weihai Master Plan and Urban Green System Plan, the planning team often has a high level of expertise, consisting of external planning or green space planning experts associated with reputable planning institutes, universities or research centres in China. The process for the recent Master Plan and Urban Green System Plan adopted an 'expert consulting' process before the final approval of the plans, whereby external planning or urban green space planning experts from national/provincial administrations/institutes and from leading departments of universities in China were invited to an 'evaluation meeting' (*Master Plan of*, 2005; Guo & Zhao, pers.comm.). Even though they also represent the green sector, ecologists and foresters are not much involved in the process of green system planning. Therefore, some relevant knowledge and instruments are not included in the plans.

According to the interviews with the private actors (e.g. landscape design firms), communication between the public sector and private stakeholders is

very limited. On the one hand, private stakeholders lack understanding of Weihai's planning discourses. Perhaps because of this lack of understanding, opinions and needs of private stakeholders are not considered in the plans. This situation is at odds with the changing circumstances of land privatization and a marked-oriented land economy.

Some efforts have been made in Weihai to take more strongly into account the wishes and needs of the general public through surveys during the planning process (*Master Plan of*, 2005; *Urban Green System*, 2002; Guo & Zhao, pers.comm.). However, this approach is still very limited. The survey conducted during the preparation of the Urban Green System Plan in 2002 may serve as an example. The survey was too simple to comprehensively incorporate issues of use of and preferences related to urban green space. It was hard to see how this survey has been analysed and applied in the plan. Except for the surveys, no other form of public participation is used during either planning process. More comprehensive public participation in the planning process is still missing, even if it is now (to some degree) encouraged by the present Chinese statutory planning discourse. Weihai's planners and landscape architects believe that they generally know what the public wants (e.g. Qi; Tian; Wang, Z., pers.comms.). They still take it for granted that they as professionals should firmly hold on to their role as technical consultants and as authorities over urban green space planning. The city government and city leaders, in their turn, take it for granted that whatever they do is for the interest of the general public (e.g. Cai, pers.comm.).

The tradition that plans are 'national secrets' because of their defence and safety connotations is a particular problem in this context. As a consequence, their contents are not commonly known, even by many professionals dealing with planning and development. Maps and plans are important basic material for the work of other sectors. They are also important media for communication between various professionals, sectors and stakeholders. The experience of investigation in Weihai suggests that information relevant for planning, such as aerial photographs, is often considered internal property of the planning sector, and sometimes even regarded as confidential. Information is not shared 'for the common good', even between different governmental departments.

COMMUNICATION AND PARTICIPATION IN THE IMPLEMENTATION STAGE

Communication and involvement of a broader range of actors is more common at the project level. Still, the same basic limitations of the political and planning system apply. For the city key projects, the Project Director Committee provides a platform for communication between sectors, as well as between city leaders and professionals. The Committee includes members from relevant administrative departments, representing various sectors and

professions. City leaders are chairmen of Project Director Committees. Through regular meetings and informal dialogues, technical and managerial decisions are made during the process of construction. Reflecting on the development process of Haishang Park, one of the members of the Project Director Committee commented, “we cooperated very well—like a big family” (Hu, N., pers.comm.). However, according to several interviews conducted during this project, the opinions of the city leader play a stronger role in the work of the Committee than those of the professionals (e.g. Huang; Liu, T., pers.comm.).

In addition to the city key projects, there is limited communication about general urban greening activities between different sectors and different zones (e.g. small-scale green space development, maintenance of local green spaces and road greening) (Lin; Liu & Sun; Qi, pers.comms.). As mentioned above in the discussion on integration, this is a consequence of the Chinese planning / organization system wherein different sectors follow different approaches and have their own regulations for green space planning. Even though belonging to the same city, their budgets for development and management are independent. This is especially true in the special zones, which have their own budgets and compete with one another for reputation and resources.

There are new tendencies for relevant professions to start cooperation on urban green space development, and more professions become involved in urban green space development. For example, in new road greening projects (e.g. that of the Airport Highway), both the Park Administration and Forestry Bureau were involved. Each of them contributed from their respective expertise. The Park Administration focused on the green space along the roadsides, with more attention to aesthetic details and recreational functions, while the Forestry Bureau focused more on forestation of more remote areas along the road to provide a visually green environment (Li, pers.comm.). Artists are invited to design sculptures and inscription paintings for city key projects, for example Weihai Park (Liu, 2001). The reason that artists play a more important role than ecologists is because they can contribute to the visual effects of green space. However, according to landscape architects in Weihai, support for integration of ecological functions is lacking.

The private sector is increasingly interested in urban green space development. For example, real estate developers develop residential green space, and private enterprises develop green space within their working environments. There is also growing communication between the public and private sectors. The leader of the City Planning Bureau, for example, was invited to a private enterprise to inspect the process of greening and offer suggestions (Wang, M.L., pers.comm.). However, the investigation of a few semi-public and private green space developments in Weihai suggested that

communication between the public and private sectors is generally 'loose' (e.g. Mingcui Park-Mingcui Mountain Village; Huaxia Pharmacy Park) (see Annex 6). Since the budgets for private or semi-private green space do not originate from the public sectors, their development has more flexibility and is free from the control of the public sector. The greening activities of the private sector are normally not interrupted unless serious problems arise. The lack of communication between the public and private sectors is also due to incomplete adaptation of public sector organization and management to new circumstances with many private actors.

The interviews revealed that, although there are formal channels (mayor's hotline, hotlines in newspapers) for citizens to express their opinions on urban greening issues, the public is little motivated to speak up. When they use hotlines, this is mainly related to protecting their own interests, for example a tree shading one's window (Tian; Xu, G.Y., pers.comms.). There are also citizens who report observed illegal activities in green space (Er, pers.comm.). Through 'duty tree planting' and 'adopting tree' activities, the public is also directly involved in urban greening, but not in any decision making. The current development stage and political culture are highly related to the low degree of public participation. For many citizens, urban green space development is not as urgent as other issues in their lives, for example a bigger flat or a better salary (Wang, X.G; Xu, G.Y., pers.comms.). General public understanding of urban green space benefits is not well developed (Tian; Xu, G. Y., pers.comms.). As a consequence, there are very few NGOs and interest groups in Weihai concerned with urban green spaces. Moreover, if citizens assume that their opinions do not really have an impact, they are not likely to make further efforts to express them.

6.6 Strategic approach in urban green space planning and development

Strategic planning and development of urban green space are important for sustainable urban development. It requires a way of thinking that takes a long-term perspective. 'Sustainable development' has become an important discourse in China's national level planning context (see Chapter 4). This section will discuss the relevance of the strategic (long-term) perspective in urban green space planning and development in Weihai. First, the section clarifies the gap between long-term oriented statutory planning and development aimed at short-term benefits. This is followed by discussion of two tendencies: rapid development for prestige and iterative development.

LONG TERM ORIENTED STATUTORY PLANNING VERSUS SHORT-TERM BENEFITS-ORIENTED DEVELOPMENT

Ideally, statutory plans are always developed with a long-term perspective. According to Chinese planning regulations, a Master Plan normally covers a

period of about 20 years, and the precise time limitation should also refer to national policies (*Measure for City*, 2005). Master Plans of Weihai and their sectoral plans are drawn up for a period of 15 or 20 years. In addition to the major plan for the planning period, the Master Plan and Green System Plan of Weihai often include a long-term plan and a short-term implementation plan for the first five years. However, the local green space planners interviewed felt that, in practice, many detailed proposals in these statutory plans were never strictly followed over the long term, although development followed the general directions that the plans pointed towards. Particularly during recent years, now that the urbanisation rate is so rapid, spatial urban development often exceeds the plan soon after it is released.

Limited planning skills in estimating the speed of urban development may be a reason why plans cannot be used over the longer term. In addition, after several years of rapid development, the existing situation of the city may be very different from what had been planned. But as mentioned above, the Urban Green System Plan of Weihai 2002 had to be based partly on an outdated Master Plan, which limited the preparation of a longer term perspective.

More limitations may be identified in the plan implementation process. Urban green space in Weihai is developed very rapidly. This seems a promising process - the city government and city leaders strongly promote urban green space development; many urban green spaces are newly developed, and overall green-space development has already exceeded the Green System Plan 2002. The rapid green space development has considerably improved the urban environment, as reflected, for example, in a better city image and more recreational opportunities in Weihai. However, this study also demonstrated that the development of urban green space is far from any long-term development strategy. On the contrary, the fast development of green is often driven by short-term benefits, as discussed below.

RAPID DEVELOPMENT FOR PRESTIGE

From the decision on which green space should be developed to determining the details of what landscape elements and functions need to be included, a long-term perspective is often missing. For public green space managed by the city government, the prioritization of green space development is often based on whether it contributes to the city image and a leader’s political achievement in the short run. Results are not so visible and are not easy to attain quickly when social issues are to be resolved, whereas city image can be rapidly enhanced through visible improvement of infrastructure, public building or public green spaces. In my interviews, several planners and landscape architects mentioned that plans need to be developed quickly, and that green spaces also need to be designed and constructed at a rapid pace.

However, realization of the many functions of urban green space needs more time and understanding of existing conditions. This is in particular true for ecological functions. For instance, trees need to grow and mature to provide their full benefits on climate. The limited time for planning and implementing urban green space makes comprehensive analysis almost impossible, which poses further challenges for realizing ecological functions, for example.

The government and leaders have great power over green space development from both a political and a financial perspective. The leaders decide on many aspects of development, ranging from where a green space should be developed first, to details such as what type of trees should be planted (e.g. Huang; Liu, T.; Qi, pers.comms.). A large budget is often used to quickly develop visual highlights of green spaces for the benefit of the city image, including specially designed sculptures for visual focus (e.g. Weihai Park), expensive (sometimes indigenous) plant materials (e.g. Weihai Waitan Park), and 'high-tech' solutions for achieving a quick visual effect from the vegetation. For example, in road greening of Huanhai road 2nd stage, instead of waiting for vegetation to grow on slopes, a process that may need five years, 6 million RMB (about 0.55 million EURO) was spent on 'high-tech' (fixing transplanted soil with steel cables) to speed up the greening process for an immediate effect on a 1.3 ha slope (Pang, pers.comm.) (see Annex 6, 5 Huanhai Road 2nd stage).

The government and leaders also have the power to manipulate development budgets. Using the government's credit, some 'image' green spaces can be developed even without sufficient funding (e.g. Huang; Wang, Z., pers.comms.). Payments from the development budget are owed to large and small enterprises that are involved in the realisation of the projects. According to the enterprise leaders interviewed, delayed payments from the government are a regular occurrence in Weihai. The delays mean that small firms can hardly stay in business.

Moreover, the rapid development also threatens the quality of life of employees who work in the green sector. Being key players in the urban greening process, they have great opportunities to gain experience and they are often enthusiastic about their jobs. However, short and strict deadlines for delivery of tasks and too frequent ad hoc changes during the development process leave little space for private life.

ITERATIVE DEVELOPMENT

Green space often has a short life cycle and typically experiences re-development throughout its existence. Sometimes, the redevelopment of other urban structures causes the redevelopment of the attached green space. In other cases, old green spaces do not meet new tastes and needs, and so they too are subjected to redevelopment. This type of redevelopment often

relates to city key projects, for example Qingdao Road and Haibin Park. The present investigation shows that many of the areas of 'key projects' are redeveloped every 5-6 years (see Chapter 5, Section 5.5), which is not acceptable from strategic and sustainability perspectives. This situation can be explained by the lack of a general perspective on future demands for a specific green space, the remorseless schedule of development (design and construction) and the leaders' spontaneous ideas for 'image projects'. Because of all these reasons, the quality of design and construction, the landscape and design style, and the function of a green space do not meet demands over long periods.

Moreover, the distribution of development resources and budgets does not always prioritize those green spaces that need urgent protection for longer term ecological reasons. Large budgets for developing 'fine-quality projects' will not reduce the possibility of re-development in the near future. Since less attention and resources are used for the maintenance and management of urban green spaces after their development, it does not take long before green spaces are outdated and need re-development. For example, Haiyuan Park, one of the parks along the east coast of Weihai, was developed only a few years ago, but damage to the pavement and facilities were often observed during the field visits.

Many redevelopments use an approach of 'changing it all over'. Former structures and vegetation do not easily survive redevelopment. Although there are also stories of preserving old trees as a result of the green professionals' efforts, these are exceptional cases (Qi, pers.comm.). Even ordinary citizens point out that this approach of development is a waste of money (e.g. Shi & Sun; Zhang, Y.Z., pers.comms.). However, opinions from different stakeholders are not sufficiently taken into account during the development process. A course of action representing the interest of only a small minority cannot survive very long and is therefore subject to continual change. The fact that changes are not subject to thorough discussion between stakeholders has also contributed to the short lifetimes of green spaces.

6.7 Issues underlying urban green space planning in Weihai

The previous sections provided critical discussion of green system planning in Weihai. Significant progress in the creation of new green spaces has been observed. Importantly, the discourse on green space has become a firm element of the city's strategic approach to urban development. However, a number of problems with this approach can be identified, for instance the weak link between strategic green space planning and implementation on the ground. It is argued in this section that these problems are related to some underlying, 'deeper' issues, notably the predominant cultural values, the strong focus on city branding as an economic strategy, the political rules of

the game, and the tension between these rules and the market economy. The conflict between the short-term orientation of economic goals and long-term goals for sustainable development is a fifth issue discussed here. Other studies on planning in China support these findings. Moreover, an attempt is made to relate the results to the debate on green space planning in Europe. This will help to draw some overall conclusions in the final chapter of this dissertation as to the further development of green system planning in China.

CHINESE CULTURE AND GREEN SPACE DESIGN

When describing classical Chinese gardens, Keswick (1986, p.7) noted that "confusing and dense, dominated by huge rock-piles and a great number of buildings all squeezed into innumerable often very small spaces, for many foreigners the characteristic Chinese garden is so unlike anything else as to be incomprehensible and even, in parts, grotesque". This is similar to the remarks from foreign visitors to Weihai's modern coastal parks, which present intensive artificial visual foci in contrast to the peaceful ocean (e.g. Huang, pers.comm.). There is no doubt that culture and cultural background influence one's aesthetic preference. Because most people interpret landscape within their own cultural frame, incorporating cultural values in urban green space design becomes crucial for the interests of local people (Tuan, 1974). Representing local culture is one of Weihai's green space planning and design discourses, whereby the culture issue is related to historical heritage protection and creation of local identity. In a study of Weihai's city identity, the urban design practice of including urban green space was lauded as a beneficial experience for creating city identity (Wang & Fu, 1998).

A closer look at the way in which culture and local identity are presented in Weihai shows that the correlation between culture and design is complex, and has many dimensions. At a small scale, thematic sculptures in urban green spaces indicate the local spirit of the ocean, a form of symbolism often used in Chinese garden design. At a larger scale, the natural mountains and ocean are respected as important for Weihai's city identity, which may be influenced by the Chinese Mountain and Water culture. For many citizens, the stereotype of the classic Chinese garden is still an icon of paradise. This can be seen in Qishi Yuan, a park with the Chinese 'water and mountain' garden style. Amid modern apartment buildings, Chinese style fish lakes, stone sculptures and pavilions attract many local residents (Field observations, 2004 & 2006). The two parks developed by local villages are also characterized by Chinese-style garden buildings. For others, western style building and green space have become attractions. For example, the arching gate in Haishang Park becomes a highlight for the whole Economic Development Zone.

In addition, green space design and aesthetic preference in Weihai appear to have a multi-cultural tendency. With China opening up to the world and the boom in urban construction, Chinese cities have become a large market for international designs. Some Chinese designers imitate western styles. At the same time, many western planning / design firms become active players in the Chinese market. Large Chinese cities have become more international, and the multi-cultural environment promotes a large variety of design styles. Urban green spaces in Weihai are mainly designed and developed by local designers, with strong cooperation from designers in larger cities, such as Shanghai. Green space design in Weihai also did not escape western influence.

Independently of Chinese or western style, obvious features of green space design in Weihai are the preference for intensive ornamental elements and man-made structures, which may be related to the Chinese garden tradition (see also Section 6.3). In order to build the relationship between the designed environment and local people, it is crucial to understand local people's cultural dimensions and aesthetic preference within green space. Which cultural dimension should be reflected in green space design? How relevant is the cultural meaning related to specific forms? How much are the 'designed' environment or cultural meaning understood by the local people? Can they be understood at all? These questions could not be answered by this study, but they do invite further thinking.

The preference for capital-intensive man-made structures is related to the strong tension between cultural and natural functions in green space design and to the level of acceptance of natural characteristics in the designed urban environment. As observed in Weihai, urban green space often has stronger cultural than natural characteristics. The meaning of 'ecological urban green space' has a specific cultural interpretation. Urban green space, no matter how artificial, is generally understood as a symbol of the ecological environment. This is related to a finding from a study of recreational behaviour in Guangzhou, a city in southern China: "It appears that their nature appreciation has a confined scope, limiting to the static, passive and scenic features such as landscape trees, and the green ambience serving largely as a backdrop for outdoor recreation. It also hints at an inherent preference for the visually dominant plants rather than the more transient, mobile, if not elusive, animals in urban greenspaces" (Jim & Chen, 2005, p. 91). These may reflect some cultural influences on the preferences for nature. It may be assumed that Chinese prefer less natural characters in urban setting. Generally speaking, knowledge of landscape ecology has not played a strong role in current Chinese urban green space design and development (Dong, 2006; Yu, et al., 2004).

Ironically, the ideal of 'men and nature in harmony' lies at the centre of Chinese culture and the Chinese garden design theory. Chinese scholars

often relate this old concept to the contemporary ecological thinking, saying that they actually share an integrative view of the relationship between man and nature (e.g. Li, 1999; Li, 2002). 'Nature and men in harmony' does seek a state of human respect for natural principles. However, human-beings still plays an essential role in the environment of 'nature and men in harmony'. In Chinese gardens, man-made elements are an important part of the scenery, and 'nature' is actually a condensed and man-made nature, which is far from the 'nature' and 'natural process' as understood in the field of ecology. Perhaps because of this, Chinese people generally welcome man-made scenery, which often consists of densely arrayed man-made structures (e.g. flower beds, sculptures, ornaments) and needs capital intensive development. However, facing the need for sustainable development, with ecological, social and economic goals as the three indispensable legs, reflection is necessary on current green space design and preference for densely arrayed man-made structures. The challenge to Chinese urban green space design is how to adapt the classic Chinese garden design tradition to the modern city and modern life on one hand, while at the same time integrating other considerations (e.g. ecology and human-oriented), instead of putting all efforts into designing so many structures as visual highlights.

URBAN GREEN SPACE AND CITY BRANDING

Weihai's urban green space planning and development are part of the story of city branding. Some Chinese scholars call it the 'city make-up movement' or 'city beautification movement', which has become a common trend in Chinese cities since as early as the 1980s (Yu & Li, 2003). Large-scale urban squares and roads are decorated with expensive materials, but there is no attention to human uses and the spirit of a place. Water borders are 'restored' and 'beautified', whereby concrete banks take the place of spontaneous vegetation. Public parks are enclosures in a city, taking the place of the natural landscape, or they are used as presentation stages and tourist spots. Large trees are transplanted from their natural or cultural locations to urban highlights (*ibid*). This 'city beautification movement' is related to the specific conditions in China, including, for example, a response to the accelerated urbanization and deteriorating urban environment, and the relatively improved economic condition (be it far from sufficient to improve the basic quality of urban environment). Other factors are the need for attracting investment, re-discovery of the western world (but only superficially), the city leaders' pursuit of political careers, and the weakness of the professionals (*ibid*). Most of these phenomena can be observed in Weihai's green space planning and development practice.

Yu & Li (2003) sharply criticised the 'city beautification movement', both in terms of its symptoms and ideological roots. According to them,

these ‘city beautification movements’ have roots in the cultural spin off from the federal autocracy and the ‘showing off ideology’ typically held by those who become rich overnight. Yu and Li suggest that an ecological approach should be applied to improve the urban environment: “When there comes green colour, fresh air and clean water, there comes beauty” (*ibid*, p. 123). The ecological aspect appears to be an urgent issue in Chinese urban development. However, seen from cultural and social-economic perspectives, it is arguable whether an ecological approach alone could fulfil social needs (e.g. people’s aesthetic preference) and those of economic development, and whether the ‘city branding’ trend of Chinese cities could be held back. In Weihai, the current city image-oriented urban green space planning and development does have positive sides. During the duration of this study, in spite of dissatisfaction with how a better city image is achieved, most interviewees (from city leaders to professionals to regular citizens) voiced positive comments on the improved city image and its related psychological satisfaction. The latter concerned both their views as individuals and the potential contributions to the city’s economic development.

City branding policy and activities, as seen in Weihai, need to be understood in the ‘urban management’ discourse that increasingly characterises urban administration in China today (Leaf & Hou, 2007). In the current Chinese context, improving a city’s economic benefits and competitiveness is the centre of concern for city governments (Zhang, 2004). The ‘urban management’ concept, referring to managing a city as enterprise, is well accepted and practised by city governments in China. The central task is to optimise the allocation of a city’s resources, especially the land resources, through market mechanisms in order to produce economic benefits. This is also the most important task and the ultimate goal of the urban planning sector. National policies then promote the competition for image among cities through a series of honorific titles, such as ‘National Garden City’. Seen from this perspective, it is not a surprise that branding the city (especially through urban green space) for economic growth has been such a leading discourse in both formal plans and development practice in Weihai.

In a western context, city image has been recognised as contributing to economic, social and cultural vitality of a city. Urban nature and green space play an important role in creating and maintaining a positive city image (Lynch, 1960; Nasar, 1997). Branding a city and improving city image for economic vitality is actually something currently stressed in the West (e.g. CABE Space, 2005; *Economic fact sheet*, 2008). In the current globalisation process, cities have to compete for political attention, investment, residents and visitors. Therefore cities need stronger identities to improve their competitiveness. Developing attractive urban landscapes (including urban green space) is an increasingly encouraged approach to achieve this purpose

(Konijnendijk, 2008). In addition, economic roles of green space, in general, have gained increased attention. Methods have been developed to quantify the non-market values of green space in order to support planning and development decision (Tyrväinen et al., 2005). Weihai's experience provides additional evidence that urban green space development does contribute to constructing a positive city image.

Branding Weihai city through urban green space planning and development is the result of the current national social, political and economic context. Its theory and practice are also relevant to globalisation and city competitiveness discourses at the international level. The goal of city branding has had both positive and negative impacts on green space planning and development in Weihai. It did enhance the city's fame and reputation. However, constraints have resulted from the strong focus on city branding, including development exceeding the city's financial capacity, neglect of professional knowledge and 'decoration' of only the surface of the city. These are all hindering factors for sustainable development. As Zhou (2003) commented, the trend for branding of Chinese cities, paying attention to city image and making a city more beautiful, is not a bad pursuit, but this should not be separated from local practical and economic conditions. If the pursuit of city image becomes extreme, it will lead to a major waste of resources and injure public interests in the long term.

POWER OF THE LEADERS AS 'RULES OF THE GAME'

Representing the city government, city leaders often play a leading role in the city branding process. In Weihai, the leaders' central role in constructing a positive and 'green' image through urban green space can be seen not only at the municipal level, but also at the sub-municipal levels. Leaders of the districts, special zones, towns and villages in the city are all enthusiastic about improving their local image. Throughout this entire investigation, the particular 'rules of the game' for urban green space planning and development in Weihai were identified many times. This needs to be seen from the viewpoint of both fiscal reforms and the leadership appointment system that characterise the current Chinese political-economic situation (Leaf & Hou, 2007).

Through fiscal decentralisation, local governments become more autonomous in managing their local economies, often by controlling local lands. This causes competition for investment between localities (*ibid.*). Observations in Weihai clearly revealed that the decentralized power structure had caused physical and functional fragmentation of urban green space. This finds echoes in a study of open space development in Shanghai, which also demonstrated that the delegation of power from city level to neighbourhood and street levels leads to fragmentation of green space (Dong, 2006). At the same time, since local officials are appointed by higher-level

governments, achieving optimal results within a limited tenure (normally four to five years) is therefore crucial to the interests of local leaders. As a result, urban projects become marketing tools for attracting investment at the local level, although the ultimate goal is to achieve a better performance by the leadership (*ibid.*). Related to this aspect, it is not difficult to understand why the 'key projects' in Weihai need to be developed so quickly in order to catch the attention of higher-level official visits. Moreover, redevelopment of the 'highlight' spots in the city takes place every five to six years.

The layered, top-down administrative structure in China interacting with changing local political economies leads to 'informality' of local governance (*ibid.*). In the face of the local leaders' dominating roles, plans, regulations, technical knowledge and even the law can lose power to the leaders' interests. In order to achieve the goals, leaders need to collaborate with limited sectors and professionals who are actually 'technical tools' serving the interest of leaders instead of the public. Although planning regulations promote public involvement, in reality, the involvement of the public and a broader range of relevant professions and sectors is not appreciated because the leaders own interests are the only concern. The city leaders are thus the actual designers of cities (Yu, et al., 2004, p.113).

From an historic-cultural perspective, the relationship between leaders, professionals and citizens follows a long-standing political culture present in both the old Chinese federal states and in contemporary post-Mao Chinese society. Leaders represent power and are responsible for making decisions and running society. Professionals show their loyalty to the leaders as technical advisers. Good citizens should conduct their duties as members of families / society and follow orders. In this way, social order and the stability of the state are maintained. In China, even though there are complaints, it is widely accepted that the practice of 'leader / party decides' is a precondition for a functioning society. Thus it is no surprise that urban green space planning and development operate in a similar way. For example, the interviews revealed that professional knowledge often adheres to the leader's judgement when there are conflicting opinions between leaders and professionals. Some landscape architects have even tried to adapt their design to the leaders' tastes, in order to win or finish a project. The public then takes it for granted that they are not consulted, even in the case of a construction next door.

Current western planning theory sees planning as a communication process and a political process (see Chapter 2). Communication should not be confined within the public sectors, or between the leaders and professionals. A broader range of stakeholders in society should be involved. Because the identification and solving of urban problems are about choices of values held by different individuals and social groups, involving different stakeholders and the public through communicative planning is important for

reaching fair and widely supported solutions. Communicative planning is based on the normative purpose that good communities are to be achieved through collaboration and negotiation, which is deeply embedded in the western democratic system and is especially related to recent governance discourse. In order to increasing a city's competitiveness in globalization, the role of city government is encouraged to change from governing to negotiation (or governance), through market-oriented government-market partnership and through public participation (Zhang, 2004). However, in contemporary China, these partnerships have not yet been shaped in urban green space planning and development. In addition to the observations in Weihai, lack of stakeholder involvement – in this case the farmers – has also been identified as a main reason for the lack of implementation of the first green ring in Beijing (Yang & Zhou, 2007).

Still, 'public participation' has become a formal planning discourse in China. The term appears in both statutory planning regulations and in planning practices (e.g. Guo, 2007; *Measures for City*, 2005; *State Council's Circular*, 2001). However, public participation in urban green space planning and decision making is kept, or appears to be kept, at a minimum level, as shown in Weihai. Some planning researchers think that stakeholders' involvement and public participation in planning and decision-making are not likely to happen in present-day China (Leaf & Hou, 2007; Zhang, 2004). At the local city level in contemporary China, the environment for 'urban governance' is not yet mature. Because the government is the decision maker on all urban issues, it is not realistic for either the market or the public to be involved in decision making (Zhang, 2004). Within the government, since the division of responsibilities and power between different sectors/zones is decided or coordinated by the higher level government, there is a low level of horizontal communication among organizations, and internal communication is not subject to open discussion.

The Weihai case shows that power of the leaders is over-played in the particular domain of urban green space planning and development. However, these are not necessarily end point circumstances. Some landscape architects interviewed in Weihai experienced a positive tendency in that an increasing number of leaders have become more open minded. Moreover, the leaders of the new generation are better educated and have greater respect for professional knowledge. Weihai, as well as many other cities (e.g. Shenzhen), has also adopted 'quasi-participation' or 'expert consulting' during planning processes, "whereby outside specialists are brought in to publicly advise on planning developments" (Leaf & Hou, 2007, p.571). For integrating green sectors and improving communication between green sectors/professions, some cities have merged their Park and Forestry Bureaus (e.g. Shanghai and Zhang Jiagan). These and other developments do

indicate a move towards a more communicative direction, be it a slow one. There is still space for improvement if awareness is raised sufficiently, especially by the government itself. The challenge is how to build up the trust and motivation of the non-governmental actors. They need to be convinced that their involvement does matter.

CO-EXISTENCE OF TWO SYSTEMS

Since 1978, the market economy has been allowed to play a role in China's economic development, together with the existing planned economy. Weihai was one of the first Chinese cities to undergo this change. Planning and design firms have been breaking the ties with public organizations, and they work with increasing independence in the market. Projects are increasingly the subject of competition and tender. Many urban green spaces, or at least their management, are being privatized. Most of the residential housing in Weihai is subject to market mechanisms. Even the development and management of public parks (e.g. Haigang Park and Haiyuan Park) may now be undertaken by private enterprises that are allowed to obtain economic and other benefits afterwards. While the economic system is being reformed, the earlier Chinese top-down administration system generally remains in place. Statutory planning of urban green space still maintains a strong top-down character, even though more flexibility is given to sub-municipal governments. The city government or the city leaders' are still the real decision makers of planning and urban issues.

The co-existence of (or the interaction between) the new market economic system and the old top-down administration system presents some challenges to urban green space planning and development that are clearly observed in Weihai. In the top-down planning approach, the green issue complications that arise from an open land market are not sufficiently taken into consideration, especially because the stakeholders in the market are not involved in planning processes and decision-making. When the implementation phase arrives, the market and the stakeholders take more control of the development. However, the market mechanism in greening issues is not mature enough and does not always function well. As a result, especially in non-public urban green space, it is difficult to implement planning goals and the quality of green space deteriorates. For example, private companies are now responsible for developing residential areas. Many residential green spaces have a low quality design and maintenance, partly due to lack of professional skills in the private companies (e.g. Huang, pers.comm.).

The situation becomes worse because the administration of the public sector has not adapted to the new circumstances in which a growing number of non-public stakeholders play roles in urban development. Although the city administrations are still responsible for evaluating and supervising the

quality of green space based on regulations, after the prioritised 'image projects', the city does not have many resources left for managing residential green space. In addition, the strong powers of the city leaders make possible greening actions that are based neither on plans nor financial capacity. This directly interferes with market mechanisms. For example, payment of the private enterprises involved in developing public green spaces does not always follow market rules.

The co-existence of these two systems in China is likely to be a fact of life for a long period of time. Green space issues will continually enter the market, and the top-down political system will continue to influence the planning and development of urban green space. How to make the best from both systems remains a challenge for urban green space planning in China.

SUSTAINABILITY VERSUS ECONOMIC GROWTH

The top-down administration system can be effective in enforcing a specific policy or planning goal. The top-down planning approach also holds potential for balancing social, economic and environmental interests to the long-term benefit of society, which is the essence of 'sustainable development'. However, the growing autonomy and flexibility of the local governments, along with the pursuit of local economic benefits, actually lead to neglect of the public's interests and to short-term oriented practice. In a complex political-economic situation, it is arguable whether goals and decisions made only within the government can represent the long-term benefits of the society. Except within statutory plans, the term 'sustainability' is not often mentioned in Weihai's urban greening practice. Even in the plans, 'sustainability' is often used merely as a rhetorical phrase, while economic growth is the actual goal. As some planning researchers have observed, the mainstream tendency of contemporary China is towards economic efficiency, but not towards social equality (Zhang, 2004).

China is experiencing very rapid urbanisation (see Chapter 4). To encourage rapid urbanisation is also one of the main national policies for promoting more economic growth. Since urban green space is an important component of a city, it is unavoidably under rapid development as well. Moreover, the general discourse on urban greening, the intensive competition among cities and the cities leaders' eagerness for political achievement are other major driving forces for rapid development of urban green space. Even though these driving forces can hardly be held back, it is still worth asking whether such rapid development is necessary (and desirable) in the context of longer-term sustainability of urban green space and urban development.

Urban green space development is often driven by a drive for short term benefits. For example, focusing on ecological functions may not provide a 'highlight' in the short term, and is therefore less valuable from the city

leader's perspective. The need for 'face projects' also threatens existing green spaces and ecological values. Improvement and maintenance of old green spaces can never have the same spectacular effect as entirely new green projects. Therefore improvement and maintenance are not prioritized in practice. This short-term perspective threatens the goal of sustainable development. As shown in Weihai, rapid development seems promising from a short term perspective. However, iterative development, the neglect of many functions of green space and development that surpasses the financial capacity of the city are barriers to longer-term (economic) development. They are also sources of the hectic and complex circumstances in the field of urban green space planning and development. Under the transfer of urban green space from public to private sectors, a new management mechanism for urban green space is necessary to secure sustainable development and long-term economic benefit. Sufficient time and resource are needed. Time is an important factor for any investigation; communication and thorough consideration are needed for improving the quality of planning, design, construction and management of urban green space.

6.8 The Chinese and European approaches to urban green space planning – a comparative perspective

The purpose of this section is to provide a brief reflection on some main commonalities and differences between green space planning in China, as exemplified in the case of Weihai, and Europe. It would be beyond the scope of this section, though, to provide a comparative analysis of the Chinese approach of green system planning with green space planning in Europe. Moreover, there is no single European approach to green space planning, as Europe is a diverse in national political and planning systems and cultures. In China, on the other hand, the overall planning system is the same throughout the country, but its application may differ greatly between cities as the local level has gained considerable autonomy recently. However, my research was based on a theoretical framework that was inspired by a conceptual approach to green space planning that has its roots in Western Europe. This concept has been called 'green structure planning' (Werquin et al., 2005). In Chapter 2, it was argued that green structure planning is based on four main principles, i.e. multi-functionality, integration, communication and strategic approach (long-term perspective). These four principles were considered useful lenses for studying and assessing the Chinese approach to green system planning.

DIFFERENT DISCOURSES: CITY IMAGE VS. ECOLOGY AND HUMAN WELL-BEING

The European concept of green structure planning has historical roots in the urban park movement, green belts and greenways. It is particular related to the contemporary discourse in western countries on communicative planning (see Chapter 2). The Chinese concept of urban green system planning is rooted historically in the Chinese garden tradition, the mountain and water culture, and the Soviet urban planning approach, but it is also influenced by historical western concepts and recent western theories and discourses about urban green space (e.g. ecology) (see Chapter 4). However, in the Chinese approach to urban green space planning and development, there is an obvious gap between statutory urban green system planning and its practice and implementation. When comparing only the statutory urban green system planning with the European green structure planning approach, it can be seen that both are attempting to adapt to the concept of sustainable development. Both have normative goals to lift the status of urban green by planning and implementation of an integrated green structure/system at the city level, and to integrate urban green space planning into urban planning. Both approaches consider ecological, social and economic aspects of urban green space in urban green space planning.

However, taking a broader view of the Chinese urban green system planning approach, including its implementation stage, the discourse focuses more on visual effects and city image aspects of urban green space with strong economic goals, while the discourses on ecology and human well-being are not much emphasised or only used in a rhetorical way. In the European green structure planning approach, the general planning concept is better integrated during the implementation stage and at the project level. Various functions and benefits of urban green space are considered in a more balanced way, wherein social values (e.g. neighbourhood revitalisation or recreational use) and ecological aspects of urban green space/structure are often of the most concern.

STANDARDISING VS. INTEGRATING GREEN SPACE QUANTITY AND QUALITY

In the Chinese (top-down) green system planning approach, strong support from the statutory planning discourse and from city government has greatly promoted the urban greening process. Even though the quality of each green space is not always ideal, protecting urban green space as a land use type is successful in itself as it leaves opportunities for future improvement. Some concrete measures of the Chinese statutory green system planning are shown to be successful (at least partly) in securing the quantity of urban green space; these measures include integration of green space with other structures through the approach of ‘attached green space’ and ‘green lines’.

However, the challenge for Chinese approach is how to integrate the quality aspects into the quantity of all types of urban green space. Both quantitative and qualitative criteria exist in a series of regulations and standards. But, because statutory planning concepts are not well-integrated in green space implementation and the focus is on statutory planning, not on green space implementation, quantitative criteria play a stronger role. Qualitative criteria are not easily followed, due to the gap between statutory planning and implementation. As a result, qualitative criteria during urban green space implementation are reduced to visual aspects and city image whereas less consideration is given to social and ecological functions of green spaces. In European green structure planning approach, there are more considerations of qualities and multi-functionality of urban green space especially at lower planning levels, and quality aspects are better integrated with quantity of urban green space.

Although Chinese statutory urban green system planning has not been well-integrated with urban planning and other types of sectoral planning, there are new positive tendencies. The low status of urban green system planning within the Chinese planning system has been increasingly discussed in the recent planning discourse at the national level. Planners of urban green space have called for a more integrative relationship (both in terms of content and process) between urban green system planning and urban planning. Even though there is not yet much support from the national planning system and regulations, planning practice has started a move towards greater integration. During the development of the new Master Plan of Beijing, for example, urban green space planners were asked to develop a strategic plan of Beijing's urban green system. The same planning team continued to develop Beijing's new green system plan (Guo & Zhao, pers.comm.).

The strength of the Chinese approach, as observed in Weihai, but also as common practice in other Chinese cities, is that the general urban greening idea is well-integrated with the overall urban policy in order to promote economic growth. Although the economic gain of this practice is not well researched and documented, it is generally felt that the outcome is mostly positive. It is also agreed that to link the image effect of urban green space with economic benefits has had a positive effect on the status of urban green space in China. In addition, with this link it is possible to integrate the three aspects of sustainable development (ecological, socio-cultural and economic) into an integrative urban development policy. This approach may inspire the European green structure planning approach, where economic argumentation for developing and maintaining urban green structures is often sought (e.g. CABE Space, 2004; Tyrväinen et al., 2005).

In the Chinese green system planning approach, researchers collaborate with government administrations to develop concepts, standards, norms and

regulations for statutory planning system. Through plan preparation experiences, they also discuss the implementation and occasionally problems of the statutory planning system in order to optimise it. Other researchers study ecological aspects of the green system and try to integrate the ecological approach with the existing green system planning approach. However, their purposes are mainly to improve the statutory planning system for the urban green system and to prepare a good urban green system plan. Very few researchers attend the implementation stage of the green system plan at the lower planning levels, through which they could reflect on and discuss the integration of green projects with planning goals. Moreover, very few researchers focus on developing basic knowledge on social and economic benefits of green space and tools for applying the knowledge to green space planning. In the European approach, there is more focus on research and knowledge development of various benefits of urban green space and measures for planning and implementation of these benefits, such as rainwater management function of urban green space. Different disciplines are involved and both technical knowledge and complex social interactions are the concerns of green structure planning research.

TOP-DOWN, HIERARCHICAL PLANNING VS. TOP-DOWN COMBINED WITH BOTTOM-UP, COMMUNICATIVE PLANNING

The Chinese urban green system planning approach and the European green structure planning approach differ significantly in their focused planning levels, applications of planning practice, criteria and related actors. Chinese urban green system planning is a top-down planning approach and focuses more on statutory planning. Its implication in planning practice is that ‘urban green system planning’ is to prepare an Urban Green System Plan of a city, based on both the national/provincial statutory planning requirements and the local situation. Implementation of the plan or green space development is not considered as a part of ‘urban green system planning’. Therefore, the actors of urban green space planning are limited to city leaders, relevant government departments and planners.

The debate on urban green structure planning in Europe, on the other hand, increasingly stresses “the importance of including the lowest planning levels in a multi-level approach and/or organising a planning cycle that combines top-down and bottom-up stages” (Tjallingii, 2005a, p. 34). Its implication for planning practice is that ‘urban green structure planning’ spans the spectrum from preparation of a green structure strategic vision at a regional level to urban green space development at a project level. It encourages an integrative process from planning idea to implementation, or projects fitting into a coherent strategic vision. Involvement of the stakeholders and public participation is crucial for this approach. The potentials of this approach, but also the challenges it meets in practice, are demonstrated in final report case

studies in the European Commission-funded scientific network COST C11 ‘Green Structure and Urban Planning’ (Werquin et al., 2005).

Emphasis on statutory planning vs. strategic planning

The Chinese green structure planning approach emphasizes statutory planning. The limitations of this approach can be clearly observed. First, statutory plans seem to be too static and inflexible for coping with the pace of rapid development and the unpredictability of change in China. (See also Yang & Zhou (2007) on the failure of the first green belt in Beijing, which was partly due to an underestimation of urban growth dynamics). Second, as sectoral planning which only follows the Master Plan, the potential contributions of green system planning to sustainable urban development are limited. Third, the lack of knowledge and tools to realize ecological and social functions challenges the implementation of the planning goals. Fourth, the separate criteria and goals for different types of green space and the overemphasis on quantitative targets, related to the separated administrative power over them, challenge both the construction of a multi-functional green space at the single space level and an integrative green structure at the city or regional level. Finally, the lack of involvement of stakeholders in planning process and decision making reduces the possibilities of balancing between various interests and improving understanding through communication.

Over large spatial/temporal scales, a bottom-up process can also be observed in Chinese urban green system planning. For example in Weihai, green space development practice along the coast brought a formal green structure into the plan several years later. Experiences from planning practices can also return to policy. However, since the focus of research is not on lower-level planning and implementation, it takes considerable time before it returns to the top policy.

For these limitations, the European green structure approach may inspire the Chinese green system planning approach in the pursuit of improvement. In the European green structure planning approach, planning goals related to multi-functionality of urban green space are considered and discussed at lower planning levels. This is what the Chinese green system planning approach is currently missing. A planning process with involvement of relevant actors and stakeholders, and with communication between them, is a widely adopted concept in the European green structure planning approach (Werquin et al., 2005). But there are also questions about this communicative planning process. For example, the communication process can be time consuming and requires significant resources. Moreover, when too much effort is spent on participation, there is a risk that the original planning goals are ‘forgotten’. There are also ongoing debates about who should be involved when and in which way. Still, in spite of these questions, there is no doubt that communication between stakeholders and public

participation could provide inspiration to Chinese green system planning, especially now that more stakeholders have appeared in the field of urban green space development. This process requires a more open planning system and a more democratic political culture.

7. CONCLUSIONS AND SUGGESTIONS

This chapter concludes the study of urban green space planning in China and provides suggestions for improvement and for future research to support green space planning. The main conclusions of my investigation of urban green space planning and development in Weihai are given first, followed by concluding remarks on the underlying issues that have influence on urban green space planning in China. Subsequently, a conclusion on the current state of Chinese urban green system planning approach is provided, taking a comparative perspective with the European urban green structure planning approach in mind. Subsequently, suggestions are provided for improvement of urban green space planning and development in Weihai and for the Chinese urban green system planning approach at large. Finally, possible directions for future research are offered.

7.1 Conclusions

STATUS OF URBAN GREEN SPACE PLANNING AND DEVELOPMENT IN WEIHAI

This investigation shows that urban greening is an important and integrative part of urban development in Weihai. The strong emphasis on urban greening can be clearly seen in urban policy, planning and development practice. There has been obvious success in urban greening practice in terms of developing new public urban green spaces and protecting urban green space as a land use type. Through improving the urban environment, Weihai has indeed raised its profile among Chinese cities. This has also had a positive effect on the citizens' feelings of confidence and social belonging. Although with Chinese characteristics, some discourses on statutory planning (e.g. those related to multi-functionality and integration) can be related to the current international discourse on urban green space planning. In general, the statutory urban green system planning in Weihai has high ambitions that are similar to those of green structure planning in Europe. However, the reality is somewhat different. The study found that there is a weak link between statutory planning and urban greening practice (between overall plan and what happens at the project level) in Weihai. From the perspective of urban green space quality, the goals and concepts in the statutory plans have not been fully realised in urban green space development and practice, and the bottom-up needs (e.g. quality green space close to home) are not emphasised enough in planning at the city level.

The following main problems can be identified: The multiple functions of urban green space are not fully considered nor realized, especially at the project level. Urban greening practice in Weihai has a strong focus on city image and visual aspects of green space, while considerations of other functions are limited. Social and cultural aspects of urban green space (e.g.

related to recreational use) are considered, but the human use dimension is limited. Although often mentioned in documents and by decision makers, 'ecology' is used in a rhetorical way and consideration of ecological functions is reduced to a minimum. Limited efforts have been made to achieve physical connection and integration of planning concepts (at different planning levels) for green spaces. This is mainly due to decentralized responsibilities over urban green space and lack of collaboration between different administrative zones, administrations and professions. Only few actors, and only within the public sectors, are involved in statutory urban green space planning, although a growing number of stakeholders, such as real estate developers and property managers, have appeared in urban green space development practice. Communication and public participation is very limited in both planning and development of urban green space. Strategic (long-term) perspectives are considered to some degree in Weihai's statutory planning, but greening practice shows that both statutory plans and green spaces on the ground do not last very long. In general, urban green space planning and development prioritize short-term economic benefits and rapid (preferable visible) effects, instead of long-term sustainable development.

Conclusion on the underlying issues influencing urban green space planning in China

The phenomenon of urban green space planning and development in Weihai needs to be understood within the general Chinese urban development context, planning system and cultural background. China is experiencing a rapid urbanisation process. At the national level, urban greening has been emphasised during recent years as an important urban policy, in both urban planning and urban development. The top-down statutory planning system of China has, to a certain degree, secured adoption of the national policy on urban greening in planning and development at lower levels of government. However, the embedded mechanism of this top-down planning system, together with that of the Chinese culture (as for example reflected in the rather closed planning system and the dominating role of the leaders) has cast barriers to sustainable urban green space planning and development in the ever changing economic and social context.

Visibly and invisibly, Chinese culture influences urban green space design and people's preference for the type of urban green space. While classic Chinese garden design continues to influence the style and function of modern urban green space, there are also tendencies towards broad acceptance of western style design. In general, man-made structures and sceneries are better accepted (even preferred) in Weihai's urban green space than elements of a naturalistic, unmanaged appearance. Culture-related preferences, e.g. with man-made structures as visual highlights, should be

respected. However, a sustainable development of urban green space also needs to consider other aspects, such as ecological and social benefits. Chinese green space design faces challenges of adapting the classic Chinese garden design tradition to the modern city and modern life on one hand, and, on the other, absorbing the essence of Western green space design (e.g. ecology and human orientation) instead of merely copying visible forms and structures. In general, there is too little knowledge and awareness of cultural influences on urban green space design; therefore little effort has been made to promote the cultural values in design or to minimize the negative tendency of design that is inconsistent with the principle of sustainable development.

The phenomenon of branding a city (district) through urban green space development in Weihai is promoted by two forces: firstly, the eagerness for economic development and competitiveness between contemporary Chinese cities, and secondly, the pursuit of career advancement by leaders at both municipal and sub-municipal levels. Together with the influence of Chinese culture on green space design, these have resulted in a fashion of fast visual-effect-oriented urban green space planning and development. This approach of city branding has had positive effects on urban development for enhancing fame and reputation. However, constraints can be identified from a sustainable development perspective. For example, exceeding a city's financial capacity, neglecting professional knowledge and decorating only the surface of a city can cause a major waste of resources and harm public interests in the long term. Alternative, more sustainable approaches for city branding through urban green spaces need to be explored.

The Chinese top-down political system and the culture-related, distinct social hierarchy determine the 'rules of the game' for urban green space planning and development. Leaders' opinions dominate decision-making over professional knowledge, plans and the public's interests. However, a tendency to involve more actors can be observed, although changes are slow. For a fundamental improvement of the urban greening issues, the old 'rule of the game' that 'leaders decide' should not always be taken for granted and other actors should become more actively involved. For example, professionals should express their technical knowledge and explain their views to other actors. As both economic factors and knowledge play increasing roles in the society, the 'rules of the game' will be inevitably become shared by political power, economic mechanisms, knowledge and broader social interests.

It was observed in this study that the current co-existence of the top-down political system and market economic system in China does bring particular conflicts and challenges to urban green space planning and management in Weihai. In order to secure the long-term benefits of urban green space, the planning and management system for urban green space need to be improved

to better fit market conditions. Communication between the government and private sectors in the green space planning process needs to be improved. Moreover, city leaders need to improve their knowledge of sustainable urban green space, and at the same time give a higher priority to long-term economic and quality of life perspectives.

In general, the Chinese urban development context determines that urban green space development is mainly driven by a pursuit of economic growth, instead of sustainable development with balanced considerations of ecological, social and economic goals. Therefore, the concept of 'sustainable development' needs to be operationalised at lower levels of urban green space planning and development in Chinese cities. Awareness should be raised on the fact that rapid development is not necessarily beneficial for sustainable development and economic growth in the long run. Slowing down the planning and development process (perhaps by enforcing stakeholder involvement requirement and strict approval procedures) for each project and improving its quality will lead to better longer-term results.

STATUS OF CHINESE URBAN GREEN SPACE PLANNING COMPARED TO EUROPEAN URBAN GREEN STRUCTURE PLANNING.

As has been shown, urban development is highly dynamic in China, and planning is experiencing great changes due to introduction of market economy principles. This is different from the Western Europe where economic development is relatively slow, though with an existing high level of economic welfare, and the urban population is even shrinking in some parts. Significant differences between China and Western Europe also remain due to cultural differences and different political systems. Despite these differences, there are many common challenges. These include how to integrate concerns related to green space into urban development and how to establish fruitful relationships between the growing number of actors in green space planning and urban planning to minimise conflicts and find win-win solutions whenever possible. In this respect, I suggest that further development of green space planning in Weihai, and indeed in China, could benefit from the debate on and experiences from green space planning in Europe.

As described in chapter 2, the European urban green structure planning approach has, among others, the following main characteristics:

- Emphasis on multifunctional urban green space, with enhancement of ecology and human well-being as central tasks. Multi-functionality is operationalised at both planning level and project level.
- Emphasis on integration of different levels of urban green spaces and integration between urban green space and other urban structures. This

includes physical connection or interactions and conceptual integration of planning ideas at different levels and between different urban and green structures. Quantity and quality aspects of urban green space are integrated in planning.
- Emphasis on stakeholder involvement and top-down combined with bottom-up planning. Planning is seen as a communicative process.
- Emphasis on strategic planning, with long-term benefits and sustainable development as central concepts. After long-term goals are set and provide overall direction, planning is open for new input and change through a communicative planning process.

In contrast, the Chinese urban green system planning approach has a strong emphasis on statutory planning with a set of quantitative criteria as an obvious characteristic. The planning and regulation of Chinese statutory urban green system planning have been greatly improved in recent years. Taking into consideration the implementation stage, the Chinese urban green system planning approach has the following characteristics:

- Lack of consideration for multi-functionality at lower planning levels, where there is more focus on city image and visual effects aspects of urban green space. However, general concepts of multiple benefits of urban green space are recognised in national statutory planning policies and do influence statutory plans at the city level.
- Green system planning has a low status in the Chinese planning system, being a sectoral planning limited by the Master Plan. Focus is mainly on the green space within the city, although there is a growing tendency to take a more regional perspective. There is a lack of emphasis on physical connections of urban green space and conceptual integration of planning ideas between different planning levels. Focus is more on quantitative than qualitative aspects of urban green space.
- It still comprises a rather closed planning system with the public sector as the main actor for planning and decision making. Other stakeholders and the public play a marginal role in decision making, although their role in urban green issues is rapidly increasing along with the expansion of the market economy. There is a lack of communication and cooperation between different actors, government administrations and professions. Planning is regarded as preparation of technical solutions.
- The goal of economic growth is also prioritised in green system planning, although the concept of ‘sustainable development’ is encouraged by statutory planning. Awareness of the long-term benefits of green space planning and development is limited.

In summary, the Chinese urban green system planning approach has its own strengths, which should be respected. But there is a need for further reform in order to adapt urban green system planning for coping with the current and anticipated changes in the economic system and society as a whole. The present study thus calls for adaptation and improvement in the Chinese urban green system planning approach through consideration of urban green space multi-functionality at lower planning levels, increased physical connections between urban green spaces and integration of planning concepts at different planning levels, giving more attention to qualitative instead of quantitative aspects of urban green space, gradual promotion of an open planning system with stakeholder involvement and public participation, and more balanced considerations of ecological, social and economic aspects with a long-term perspective for sustainable development. The study also calls for future development and research on this recommended approach, paying more attention to urban green space planning practice and to implementation.

With China opening up to the world, there are growing exchanges of both academic knowledge and planning concepts and practices. In some aspects, international experiences have influenced the circumstances in China. These influences have included earlier planning ideas of park systems and green belts, the discourse on sustainability, ecological studies, and quantitative standards for recreational distance. However, stakeholder involvement, public participation and communicative planning theories, which are very much in focus in Europe and elsewhere, are currently not given much attention in the Chinese green system planning approach. This needs to be understood against the background of the general Chinese top-down planning system, political-economic context and cultural background. Obviously, knowledge and experience cannot always be directly transferred from country to country. In-depth studies are valuable for filling in the gaps. Hopefully, this study has provided some useful insights that provide a basis for further work.

7.2 Suggestions for future planning and research

SUGGESTIONS FOR WEIHAI'S URBAN GREEN SPACE PLANNING

Based on the study's findings, the following recommendations can be made for urban green space planning in Weihai:

- There is a need to consider multi-functionality of green space at the project level, while at the same time relating it to the city level planning discourse. According to the current circumstances in Weihai, special attention should be given to the ecological aspects of urban green space,

and how to combine ecological goals with other social and economic goals.

- In addition to the current attention given to the quantitative aspects of urban green space (e.g. standard for a minimum percentage of green space per housing area), more attention should be given to the more quailtative aspects of urban green space, especially in terms of ecological aspects of urban green space, accessibility for recreation, and green space quality close to home. More attention should be given to 'other green space' (see Classification of urban green space, Annex 5, Table A5.2), for example in mountain areas, making sure that protection is combined with particular uses.
- At the city level, a collection of instruments and tools should be developed for achieving multifunctional urban green space (e.g. by combining certain ecological functions with other social and economic functions) at various levels. Development of this 'toolbox' should involve relevant professions (e.g. biologist, urban ecologist and hydrologist) and people with local knowledge. The instruments and tools, such as clear guidelines and easy assessment tools, should provide conceptual and technical support, and be realistic for implementation. The collection should be open for new inputs and updates. The 'toolbox' might be an attachment to the Urban Green System Plan. It should be also accessed by a broad range of professionals and other actors for green space planning and development.
- More effort should be made to enhance the basic understanding of urban green space and its use at the local level. This could include:
  - A digital mapping system of Weihai's urban green space, based on accurate surveys using GIS and other tools. This system should include basic information about existing green spaces, their vegetation, other charactistics and uses. The maps would preferably be linked to the plans or include information from the plans. This task probably needs to be organized at the city level and could combine other important information and goals, for example about ecologically sensitive areas. A special team needs to be set up for updating the maps and information through time. This mapping system will provide more precise information for future planning and development of urban green space. It is crucial that the mapping system becomes an integrative part of daily planning practice.
  - To support the above, as well as general decision making, regular surveys should be made of existing recreational uses and preferences for green space use in Weihai. Also, the existing accessibility of green space for different uses should be assessed and monitored. Linked to this, people's aesthetic preferences should be assessed,

paying special attention to the acceptance of naturalness. This may be organized at the regional level, but study at the city level is valuable as well. It is also valuable to compare the results between cities and between regions. The aesthetic preferences can offer basic information for green space planning and development and for identifying goals for public education, for understanding, and using urban green space in a sustainable way.

- Conducting basic work on understanding the local plant resources (including wild plants in mountains) and their possible uses in urban environment, and on introducing them to be used in urban green space planning and development.

- At the city administration level, attention should be directed to management aspects of urban green space, and less focused on intensively developing new urban green space. These management aspects of urban green space may include:
  - Developing a better evaluation, supervision and approval system for individual urban green spaces, and especially also for private and semi-private green space. For example for approval of projects / developments, each project / development should consider physical linkage to its broader green structure and the conceptual linkage to the qualitative goals of its higher level green structure. This approach will in turn give inspiration for adjustment of the Urban Green System Plan.
  - Developing better communication channels between the public sector and the private / semi-private sector stakeholders. This may be through a series of training courses, including topics such as introducing the major plans, instruments and tools for sustainable urban green space development, maintenance of urban green space, and so on. Involvement of relevant government departments, professionals, private design firms, real estate developers, green space maintenance companies, representatives of residents in green space planning and management debates is important.
  - Promoting communication and cooperation between administrations of urban green space at different levels, between (especially) different districts and zones and between different sectors (e.g. Construction and Forestry sectors). At the same time, there should be exploration of the possibility of centralizing the overall planning and management of urban green space into a city level organization (in the Planning Bureau and Construction Committee), paying special attention to the special zones. Since the special zones share a large tract of land in Weihai city, the planning and management of

urban green space in the special zones should be easily coordinated from a city level.
  - Making the Master Plan, the Urban Green System Plan and other plans more accessible to various stakeholders and to the general public, perhaps through website and folders, providing key concepts and goals, together with figures and maps.
- An approach to strategic planning should be explored, whereby overall concepts, goals and principles of future development are defined for the statutory plans, while allowing flexibility of these plans for adjustment to specific circumstances. At the same time, there should be strict control over development that lies beyond the frame of the strategic plans, especially in the case of iterative developments (re-development of a recently constructed green space).
- Sufficient time needs to be reserved for urban green space development (planning, design and construction process), including the decision process of key projects of the city, so that better assessment of current circumstances and needs, better communication and better quality can be secured. Especially for vegetation, large investments to achieve quick visual effects should be avoided, and more focus should be on natural development. Maintenance and management of urban green spaces need to be improved and prioritised (also in terms of budget), so that functions of urban green space can be sustained over a longer period. The goal of a project should not be to meet a special deadline to demonstrate success, but to create well-functioning and sustainable space for people.
- Decision-making on a city key project should be more transparent. Before the decision, other stakeholders' opinion should be considered. Moreover, the financial capacity of the city should be considered. Creative ways of budget management should be encouraged, but they should respect the rules of the market. The development budget needs to be secured before the construction. Regulations need to be developed to protect the function of the green market.

SUGGESTIONS FOR FUTURE DEVELOPMENT OF THE CHINESE GREEN SYSTEM PLANNING APPROACH

Many of the suggestions provided above for Weihai in particular also seem relevant to Chinese green system planning at large. However, the following specific national recommendations can be given:

- At the national level, for realizing the multifunctional benefits of urban green space, research and good practices should be promoted, for example by incorporating knowledge of a broader range of professions (especially those related to ecology and human well-being) into statutory

planning at various planning levels, and development of technical guidelines for implementing planning concepts and urban green space development. Consideration of multi-functionality at lower planning levels and at a project level should be promoted by national actors.

- Alternative ways of city branding that involve green space should be enhanced. These should focus more on the issues beneficial to people and the environment in the long term, instead of focusing mainly on the quick visual effects of the development.
- National policy, regulations and organizations need to be adjusted in order to promote integration between urban planning and urban green system planning for both statutory planning and development of urban green space (implementation stage). The role of urban green system planning should be upgraded. Urban green system planning should also be able to have input into the preparation of the Master Plan, instead of simply being restricted by and derived from the Master Plan. Regulations are required to ensure that the planning concepts are integrated at lower planning levels, especially the project level.
- National policies and regulations for urban planning and urban green space planning need to be improved in order to promote and secure the processes of public surveys and public consultation in planning and development ideas (prior to final decision and construction). Different opinions and ideas should be allowed and considered in the planning and decision making process. At the same time, the applicability of other forms of public participation in the Chinese context should be studied and tested. This aspect needs the support of research, which brings together existing methods and experiences from western planning practice and the experimental cases in China.
- Gradually, an open planning system and an open political culture are to be created, whereby different stakeholders are given opportunities to express their opinions and to feel that they have responsibilities in contributing to the processes of planning and development. Open communication between different actors should be enhanced. In the changing planning context, with more actors and stakeholders involved in green issues as a result of the free market, the roles of different actors in urban green space planning and development should be discussed and re-adjusted.
- Better awareness is needed of the ‘rules of the game’ (leaders have power over decision making) when making policy and regulations for urban green space planning and urban greening, in order to gradually find counter measures. The leaders’ role in encouraging communication and public participation should be strengthened, so that valuable knowledge and motivation are not lost in the face of political power.

- Through national policy and regulations, there should be a better understanding of ‘sustainable development’ and its application in urban green space planning and development, and of operationalising ‘sustainable development’ at a local level and lower planning levels (at the project level, in particular). Balanced consideration should be given to ecological, social and economic goals with the future generation in mind, instead of simply prioritizing economic growth.

SUGGESTION FOR FUTURE RESEARCH

Most suggestions for the improvement of urban green system planning listed above, especially those for the national level, need supports from research. The following three aspects are identified as most needed for future research:

(1) Studies that provide basic information on urban green spaces and their use. These studies should answer these questions: What green spaces do we have? How do they function for the city and the people? What green space do people like?

Compared with research on ecological aspects of urban green space, research on socio-cultural aspects has been limited so far. Therefore, basic research on the socio-cultural aspects of urban green space planning and design should be promoted, for example to identify the aesthetic and recreational preferences of people.

(2) Studies that assist in identifying ‘good practices’ in urban green space planning and development in China.

In general, research on urban green system planning that focuses on planning practice and the implementation stage, and at lower planning levels should be promoted. This will contribute to identifying problems and challenges and reduce the gap between statutory planning and practice.

(3) Studies that aim at developing tools to support urban green space planning and development, for example information tools, decision-supporting tools and technical tools for transferring planning concepts into planning and development practice.

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ANNEX 1. PLAN FOR CASE STUDY DATA COLLECTION

Each research question was broken down into several analytical questions. The analytical questions help collection of relevant data, and help the analysis to answer the research questions. Table A1.1 shows a plan for data collection made prior to the study trips. The analytical questions and subsequent data collection and analysis were grounded in the theoretical framework of the study.

The relevant contextual data, especially about the Chinese background of urban green space planning and development were mainly derived from literature. These are not included in the table of the data collection plan. In addition to this plan, further detailed plans for data collection were elaborated, for example interview questions and guidelines for on-site observations.

1. What are the main arguments for urban green space planning and development in Weihai city? What are the overall goals articulated in the planning documents? Are these in line with the interests of different stakeholders?

Analytical questions:

- What are the goals of Weihai's green space planning and development? Which aspects of urban green space benefits are considered?
- What instruments are suggested and used for achieving the goals and green space benefits?
- What are the priorities among the various goals, as well as among various green space benefits?
- Are there any differences in goals and benefits between the plan and the implementation?

2. How has urban green space been planned and developed in a rapid developing Chinese city like Weihai? Who are the main actors in this process and how do they interact with each other? Are the key stakeholders involved in urban green space planning at various planning levels?

Analytical questions:

- How has the process of urban green space planning and development been organized in Weihai? Who is involved in the process? What are their responsibilities? How are the decisions made?
- How do the actors communicate during urban green space planning and development process? How is public participation, if any, arranged? To what extent are the actors aware of communication and public participation?

- What is the role of urban green space planning in the urban development process? What is the relationship between urban green space planning, urban planning and other sectoral planning?

3. What are the outcomes and impacts of the recent urban green space planning and development in Weihai? Analytical questions:

- What greening activities have taken place? To which changes in the physical urban environment have they led? What has been the influence of these greening activites and changes on the city and its citizens?
- What is the relationship between urban green space and the natural landscape of Weihai (physical, visual and functional connections)? What is the relationship among green spaces (within the green structure), and between urban green structure and other urban structures?
- What evidence exists for the promotion of ecological, social, structural and economic benefits of urban green space? To what extent are city level goals for urban green space planning reflected at the level of individual green spaces? Is there any evidence of multifunctional use of urban green spaces? Is there any conflict between functions?

Table A1.1. *Plan for data collection in relation to the research questions in the Weihai case study.*

	Data needed		Data collection
City Level	**Documents**	National/provincial/city greening policy and norms, and urban development policy with relevance to urban green space[1]; Urban Green System Plan[1, 2]; Master Plan and other relevant plans[1, 2]; Documents on activities of the Park Administration and other major departments[1, 2]; Public media, etc[1, 2, 3]; Maps of existing green spaces[3]; Relevant study or analysis of existing green structure or green spaces[3].	Collecting the relevant documents and maps from relevant administrations, planning/ design firms; Based on the theoretical framework of analysis (key questions), organizing data, making analysis and writing notes and diagrams.
	Interviews	Leaders from the city council responsible for planning and development[1, 2, 3]; Planners and designers from relevant administrations (Park Administration, Planning Bureau, Forestry Bureau etc.) [1, 2, 3]; Developers/entrepreneurs[1, 2, 3]; Interest groups, if any[1, 2, 3]; The public[1, 2, 3].	Transfer the research and analysis questions into concrete interview questions; Interview the actors / stakeholders, writing interview notes; Based on the frame of analysis (key questions), organizing data, making analysis and writing notes.
	Urban green space as artefact	Field notes of the observation of urban green spaces[3]; Diagrams or figures of the analysis[3].	Walking / cycling through the city, and making analyses of the sites; Writing notes from analysis and impressions.
	Direct observation	Field trip notes on direct observation of the process & interactions[2]	Informal communication with actors; participate in meetings; making field trip notes, reflection and analysis of the process
Site level	**Documents**	Project task description[1, 2]; Design proposal, and project process documents[1, 2]; Evaluation reports or relevant study of the site, if any[1, 2, 3]; Pictures from the site[3].	Collecting relevant documents; Organizing data, undertaking analysis and writing notes.
	Interviews	Political supporter of the project, if any[1, 2]; Project leader[1, 2]; Planner, designer or constructor[1, 2]; Other relevant actors and the public[1, 2].	Develop interview questions; Interview the actors relevant to this project, writing notes; Organising and analysing data.
	Observation and landscape analysis	Field notes of the observations[3]; Diagrams or figures of the analysis[3].	Walking / sitting in the green space, making observation and making analysis on the site; Writing note of analysis and impression.
	Direct observation	Field trip notes on direct observation of the process & interactions[2]	Informal communication with actors; participate in meetings; making field trip notes, reflection and analysis of the process.

Note: Superscripts "[1, 2, 3]" in the table refer to the numbered research questions.

ANNEX 2. INTERVIEW QUESTIONS

Table A2.1. *Interview questions during the first major study trip (October/November, 2004). (continued on next page).*

	Interview Questions	**Detailed questions for analysis and interviews**
General information about Weihai's urban green space	How has urban green space been registered in maps, plans or other documents?	Made by whom? For what reason/use? Which types of green space are included? Why? Is there any information about ownership or types of green space? Why? Is there a digital map of green space?
	How does the city plan and develop urban green space?	What kinds of places are turned into green space? Why? Who is responsible for the management of green space? What functions and benefits are urban green spaces expected to provide? Is there any change of size, appearance and function between old and new urban green space? What is the influence of urban green space development on nature and city development?
Urban green system planning	Among green projects, urban green system planning, garden city competition and national or provincial policy and norms, what do you use for promoting urban greening and urban development of Weihai?	How does the city use national/provincial policy & norms? Use them directly or combine with local situation and integrate into local policy and tools? How has Urban Green System Plans of Weihai been used?
	How do you integrate the concepts of recreation, aesthetics, ecology, economy and culture/identity into urban green space planning and development? How do you do combine different benefits and goals of green space and how do you prioritize when conflicts arise?	How have the ideas/concepts of the Urban Green System Plan of Weihai 2002 been interpreted and applied in green space planning and development practice? Are there any operational suggestions/tools available for realizing these ideas? In the plan, is there any suggestion about combining benefits and goals of green space?
	How were the Urban Green System Plans prepared? How have the opinions from the public, relevant departments (e.g. Forestry Bureau, City Planning Bureau etc.), and local experts been used for plan preparation?	Who was involved in the preparation of Urban Green System Plan(s)? Why did they prepare the plan? How did they participate? What were the basic materials they used (e.g. national, provincial regulations & norms, Master Plan)? How were they used? Is there any public participation? Are there any other actors/stakeholders involved? How were their opinions used in the plan preparation process?
	How has the Urban Green System Plan been used by lower level departments, landscape architects and planners?	How has the plan been passed on to relevant departments? If not, why? Is it generally understood and accepted by the actors? How do they use it? To what extent has the plan been implemented? To what degree (e.g. keeping the land use, developing green space)? What is the quality? Has the implementation fulfilled the ideas laid out by the plan? Have there been problems in implementing the plan? Why? How were they solved? How far have the suggestions on implementation in the plan been applied?

Green projects and their relation to Urban Green System Plan	How do you integrate the concepts of recreation, aesthetics, ecology, economy and culture/identity into green projects?	What is the goal of this project? Does it have any conflict with city development? Who is involved in preparing, designing and management of the project? What content (structure) is put in the project and what activities are planned? Does it fulfil the regulation and norms? What is the natural & social influence of the project?
	How do you combine green projects with other development projects (infrastructure projects, building projects)? What do you do if green projects meet barriers because of other development projects?	What is the purpose of the project? Who is involved in the project? How much green character do these projects consider? Do they fulfil regulation or norms about green percentage? Do they follow the land use plan or city plan? Why do they increase or decrease green space in the projects?
	What initiates green projects? What factors do you think can bring green projects successfully through the competition for urban space? Why?	Are there any conflicts between green project and other projects? What and why? What is the result of the conflict in reality? What is the influence on city development? Are there any tools for strengthening green projects?
	How much do Urban Green System Plan, Master Plan, National Garden City competition or other policies influence green projects? To what extent are the concepts of the Urban Green System Plan realized in green projects?	Do green projects refer to the Urban Green System Plan? If not, what is the motivation behind the green projects? Are the planning concepts coherent between the Urban Green System Plan and green projects? Does the Urban Green System Plan influence the green projects?
The role of urban greening and urban green system planning in Weihai's urban development	How much do you think urban greening contributes to Weihai's development?	Does the city emphasise urban greening? What are the goals of urban greening? What activities take place in Weihai during urban greening? Who takes part in the activities? For what? Does urban greening have any conflict with other perspectives of city development? How does the city set priorities between them?
	What is the role of urban green system planning in Weihai's development?	Do planners use it as an instrument for integrating green areas into urban development? Does the Urban Green System Plan create links with planning for nature, water and traffic? How does this influence the role of green areas in urban development? Has the Urban Green System Plan been linked to investment strategies and maintenance budget? Has Urban Green System Plan played a critical role in building bridges between a strategy and actual projects?
	How much does urban green system planning influence city planning and city development? Is there any strong need for urban green system planning?	Do they have the same viewpoints on preparing and using Urban Green System Plan? What is the difference? Why?

Table A2.2. *Interview questions during the second major study trip (August 2006).*

	Interview questions
City level	Who are the main actors in Weihai's urban greening process? Who is responsible for the planning, implementation and management of urban green resources? Who are the stakeholders? Who plays a main role in Weihai's urban greening? And why?
	What are the main goals of Weihai's urban greening? What do you think has been the focused benefit of Weihai's urban greening (city image, recreation, aesthetics, structure, ecology, economy)? What do you think it should be? Can you explain the meaning of your mentioned benefit/goal? *(Is the multi-functionality of green spaces considered)*?
	How are green spaces planned, designed, implemented and managed? How did you take part in this process? How did others take part? How are the developments of green space related to other types of developments? What is the level of communication/cooperation between different actors? Were you able to put your ideas into the process? Is there any conflict of ideas in the process?
	What are the challenges for reaching the goals (or your expected goals) of Weihai's green structure? What are the challenges during the urban greening process (e.g., conflicts of interests)?
	What do you think is the role of the overall urban green structure in the city? How is it related to the natural landscape, the regional actual landscape/green structure? How is it related to the green structure in Weihai's green system plan (if you know about it)?
	What is the importance of urban green space for your life or your own interest (mainly for the groups outside the administrations)? Are you satisfied with the outcome of Weihai's urban greening (green space functions)? Why? If you are not satisfied with the green space, how would you be able to express your opinions (mainly for the groups outside the administrations)? Are you satisfied with the planning and development process? Why?
Project level	When was the project planned and developed? Who was involved in the project (planning, implementation and management)? Who are the stakeholders? Who plays a main the role in the progress of the project? And why?
	What is the purpose of this project? Why is it decided upon, by whom? What do you think has been the main benefit/goal of this project (city image, recreation, aesthetics, structure, ecology, economy)? What do you think it should be? Can you explain the meaning of this benefit/goal? (*Is the multi-functional use of the green space considered*)?
	How has the project been planned, designed, implemented and managed? How did you take part in this process? How did others take part? Was it developed together with other type of development? How were they related? How was the communication/cooperation between different actors? Could you put your ideas into the process? Was there any conflict of ideas in the process?
	What are the challenges for reaching the goals (or your expected goals)? What are the challenges during the project process? What are the key problems during the approval/acceptance of this project (mainly for design and implementation firms)?
	What do you think is the role of this green space in the neighbourhood and its role in the overall urban green structure and in the city? Who is using it? How is it related to the natural landscape? How is it related to the green structure in Weihai's Urban Green System Plan (if you know about it)?
	What is the importance of this green space in your life or your own interest (mainly for the groups outside the administrations)? Are you satisfied with the green space and its functions? Why? If you are not satisfied with the green space, how are you able to express your opinions (mainly for the groups outside the administrations)? Are you satisfied with the planning and development process? Why?

ANNEX 3. LIST OF INTERVIEWEES

Listed here are the actors in urban green space planning and development that were interviewed for the study. In the text, reference to an interview is made by 'pers.comm.' to the name (example: Wang, pers.comm.). The time of the interview does not appear in the citations, but it is listed here.

In the list, interviewees are categorized in to groups: (1) Politicians; (2) External experts; (3) Local practitioner with knowledge of urban green space (A. Public sector; B. Semi-public sector; C. Private sector); (4) Local practitioner with less knowledge of urban green space; (5) Commercial sector; (6) NGOs and Interest groups; (7) The general public; (8) Media.

City level

Interviewee	Time	Profession & position	Group
Cai, Z.Q.	(2004, November 12)	Vice-director, Weihai Municipal Engineering Company.	(4)
Cai, H.P.	(2004, November 19)	Deputy director, Weihai Construction Committee.	(1)
Du, J.G.	(2004, November 11)	Planner, Director of Section for Planning, Weihai City Planning Bureau.	(3)A.
Er, X.L.	(2006, August 16)	Journalist, Weihai Evening Newspaper.	(8)
Guo, Z.M. & Zhao, F.	(2004, October 26)	Landscape architects, Planners of Weihai's urban green space system plan, Beijing Beilin Dijing Planning and Design Institute.	(2)
Hu, X.Y.	(2006, August 15)	Director, Section for Tourism Planning and Development, Weihai Tourism Bureau.	(4)
Huang, H.D.	(2004, November 1)[1]. (2006, August 26)[2].	Former chief landscape architect/engineer (Retired), the City Park Administration of Weihai.	(3)A.
Li, X.	(2004, November 14)	Forester, Vice-director of Weihai Forestry Bureau.	(3)A.
Lin, Y.S.	(2004, November 5)	Department for Municipal Work, Weihai Economic & Technology Development Zone.	(3)A.
Liu, Q.	(2004, November 16)	Chef planner for Weihai's Master Plan (2004), Planning and Design Research Institute of China.	(2)
Liu, & Sun, Y.	(2004, November 7)	Landscape manager (Liu) and Landscape architect (Sun), High-tech Zone of Weihai.	(3)A.
Qi, H.F.	(2004, November 17)[1]. (2006, August 26)[2].	Landscape architect, Director of Weihai Park Administration.	(3)A.
Shi, Z.F & Sun, Q.H.	(2006, August 27)	Weihai Elderly Sport Association.	(6)
Sui, Y.H.	(2004, November 12)	Planner, Director of Weihai City Planning Bureau.	(3)A.
Tian, L.	(2006, August 26)	Landscape architect, Vice-director, Weihai Lvyuan Landscape Design Co.Ltd.	(3)B.
Wang, X.G.	(2006, August 26)	Photographer, Director, Weihai Photographer Association.	(6)
Wang, Z.	(2004, November 3)	Landscape architect, Head of Weihai Lvyuan Landscape Design Co. Ltd., Weihai Park Administration.	(3)B.
Wu, L.	(2006, August 11)	Director, Weihai Yuanye Landscape Co. Ltd.	(3)C.
Xu, G.Y.	(2006, August 24)	Horticulturalist, Director, Weihai Lvyuan Ornamental Horticulture Co.Ltd., Weihai Park Administration.	(3)B.
Yin, S.S.	(2006, August 27)	Citizen, Leader, Grass-roots interest group for neighbourhood green space management.	(6)
Zhang, J.M.	(2006, August 11)	Director, Jianming Landscape Engineering Co. Ltd.	(3)C.
Zhang, Y.Z.	(2006, August 27).	Citizen.	(7)

Note: Names in bold font refer to actors who also acted as main informants, apart from being interviewees. In addition to the major interviews with them during the study trips (listed above), informal telephone interviews were also conducted to obtain additional information.

Project level

Interviewee	Time	Profession & position	Group
Chen, X.C.	(2006, August 21)	Manager for greening the Haishang Mingzhu residential area.	(5)
Hu, N.	(2006, August 15)	Manager, Haishang Park.	(4)
Ji, X.D.	(2006, August 19)	Architect, Manager for the construction of Shandong University Weihai campus.	(3)A.
Liu, F.T.	(2006, August 13)	Manager, Weihai Park	(3)A.
Liu, T.	(2006, August 23)	Manager for the construction of Qingdao Road greening.	(4)
Liu, X.C.	(2006, August 15)	General-Secretary of Chinese Communist Party Goubei Village Committee.	(1)
Niu, Y.X.	(2006, August 21)	One of the landscape architects for the landscape design of Shandong University Weihai campus.	(3)B.
Pang, W.T	(2006, August 21)	Manager for Huanhai Road 2nd stage greening project.	(4)
Song, Z.H.	(2006, August 18)	Manager, Huancui District Forestry Bureau.	(3)A.
Wang, M.L.	(2006, August 24)	Manager for the construction of Weihai Huaxia *Pharmaceutical Ecological Park*.	(5)
Xu,.	(2006, August 21)	One of the landscape architects for the landscape design of Qingdao Road greening.	(3)B.

ANNEX 4. GUIDELINES FOR URBAN GREEN (SPACE) SYSTEM PLANNING (TRIAL EDITION)

This translation is based on Ministry of Construction (2002).

This Guideline is made in order to: implement 'Regulations for Urban Greening' (the State Council (1992) No.100 Command) and 'State Council's Circular about strengthening the development of urban greening' (*guo fa* (2001) No. 20); systematize and standardize preparation of 'Urban Green (Space) System Plan' in China; ensure the quality of the plan (planning) and fully promote the ecological-environmental benefits, social-economic benefits and landscape-cultural functions.

'Urban Green (Space) System Plan' is a sectoral plan of 'Master Plan'. It deals with in-depth and detailed issues of 'Master Plan'. 'Urban Green (Space) System Plan' is supposed to be prepared by collaboration between a city's statutory department for urban planning and its statutory department for urban parks. 'Urban Green (Space) System Plan' should be included into 'Master Plan'.

The main tasks of 'Urban Green (Space) System Plan' are: based on thorough investigation and research and according to rules, such as the city features, development goals and land use layout etc., defined by the 'Master Plan', to scientifically define the norms for the development of various types of urban green spaces, and to reasonably arrange the construction of various types of urban park green space and the spatial layout of greening for the larger regional environment, in order to achieve the goals of protecting and improving urban ecological environment, of optimizing the environment of urban human settlements, and of promoting sustainable development.

The output of 'Urban Green (Space) System Plan' includes four parts: planning text, planning manual, planning illustration and basis materials for planning. Among these, approved planning text and planning illustrations have the same legal effect.

The interpretation of this guideline refers to the Ministry of Construction. The guideline takes effect from date it is issued. All the cities in China should obey this guideline during the preparation and evaluation process of 'Urban Green (Space) System Plan'. In practice, cities can actively explore (the use of the guideline) and report (to the Ministry of Construction) as soon as problems are identified, so that the guideline can be further enriched and improved.

Planning text

	Name of the chapters	Contents
1	General principles	Including planning border, planning basis, planning guiding ideology and principles, planning period and scale etc.
2	Planning goals and norms	
3	Regional green system planning	
4	Urban green system planning –structure, layout and zones	
5	Planning for various types of urban green space	Introduction of planning principles, key elements and norms for various types of urban green space.
6	Vegetation (tree) species planning	Planning the amount and technical & economical norms of vegetation (tree).
7	Bio-diversity protection and construction planning	Including planning goals and norms, protection measures and countermeasures.
8	Ancient trees and precious woods protection	Amount of ancient trees and precious woods, their species and growth situation
9	Planning for construction in stages	Divided into short-term, middle-term and long-term plan, emphasis on clarifying the short-term projects and their cost and benefit estimations.
10	Measures for plan implementation	Including measures in terms of laws and regulations, administrative, technical, economic and policies aspects.
11	Appendix	

Planning manual (Continued on next page)

	Name of the chapters	Contents
1	General introduction & existing situation	1. General introduction. Including natural, social, environmental condition and the general situation of the city etc. 2. Existing situation of green space and analysis. Including statistical analysis of various types of existing green spaces, advantages and impetus, main existing problems and constraints for urban green space development.
2	General planning principles	1. Significance of the preparation of the plan 2. Basis, time frame, geographical scope and dimensions of the plan. 3. Guiding ideology and principles of the plan.
3	Planning goals	1. Planning goals 2. Planning norms
4	Regional green system planning	Clarifying the structure and layout of the regional green system plan, and the development plan of various types (of urban green space). Constructing a green system, which is based on the central city as a core, covers the whole city region, and integrates city and countryside.
5	Structure, layout and zoning of Urban Green System Plan	1. Plan structure 2. Plan layout 3. Zoning of the plan
6	Urban green space planning for various types of urban green space (according to the Classification, see also Table A5.2)	1. Urban green space classification (According to the national standard 'Standard for Classification of Urban Green Space' GJJ/T85-2002) 2. Planning for Public Park Green Space (G1) 3. Planning for Production Green Space (G2) 4. Planning for Protection Green Space (G3) 5. Planning for Attached Green Space (G4) 6. Planning for Other Green Space (G5) Describing separately the planning principles, planning (main) contents and planning norms of various types of green spaces, and identifying the basic species, key species and ordinary species (for various green spaces).
7	Tree species planning	1. Basis principles for tree species planning. 2. Identify the vegetation zone of the city. Including climate zone, regional vegetation type, plant communities and their key species, and soil types. 3. Technical and economical norms. Define proportion of gymnosperm and angiosperm, proportion of evergreens and deciduous vegetation, proportion of trees and shrubs, proportion of woody plants and herbs, proportion of native species and exotic species (and preparing ecological

		security analysis), proportion of fast-growth, middle-growth and slow-growth species. Defining vegetation index of green space (family, genus, species and the units below). 4. Selection of basic species, key species and ordinary species. 5. Selection and suggestion for city flower and city tree.
8	Biological (mainly plants) diversity protection and construction planning	1. General existing situation 2. Goals and targets for bio-diversity protection and construction. 3. Levels and plan for bio-diversity protection and construction (including species, genes, ecosystem and landscape diversity planning). 4. Measures and ecological management countermeasures for bio-diversity protection and construction. 5. Protection and countermeasures for precious and close-to-extinction plants.
9	Ancient trees and precious woods protection	
10	Planning for construction by stages	Implementation of urban green system plan can be divided into three stages: short-term, middle-term and long-term. When arranging planning goals and key projects of various stages, it should respect the urban green space's development pattern and characters. The short-term plan should define planning goal and key tasks, as well as the concrete projects and their scale and budget estimation; middle-term and long-term construction planning mainly include projects, their plans and rough estimation of budget.
11	Implementation measures	Discussing the measures in terms of laws and regulations, administrative, technical, economic and policies aspects.
12	Appendix and annex	

Plan illustrations

	Name of the Plans/Maps	**Contents**
1	Location and Urban Districts Relations Map	
2	Existing Condition Map	Including city's comprehensive existing condition map, existing condition map for built-up areas, existing condition map for various green space, and distribution map of ancient trees and precious woods, and historical sites etc.
3	Urban Green Space Existing Condition Analysis Map	
4	General Plan	
5	Plan for Greening Regional Large Scale Environment	
6	Plan for Various Types of Green Space (according to the Classification, see Table A5.2)	Including plans for park green space, production green space, protection green space, attached green space and other green space.
7	Short-term Construction Plan	
Note: Scale of the maps is generally identical to the Master Plan, normally 1:5000 – 1:25000; the scale of the Location and Urban Districts Relations Map can be smaller (1:10000– 1:50000); the scale of the Plan for Various Types of Green Space can be bigger (1:2000 – 1:10000); Insert the 'wind rose'; Existing condition maps as well as Plan for Various Types of Green Space, for example production green space, protection green space and other green space etc., can be combined.		

Collection of basic materials

	Name of the chapters	Contents
1	General condition of the city	1. Natural condition: geographical location, geology and landforms, climate, soil, hydrology, vegetation and the main animals and plants 2. Economic and social conditions: economic and social development level, city development goals, population condition, various land use condition. 3. Environment protection material: main pollution source of the city, distribution of the heavily polluted areas, pollution control situation and other environmental protection data. 4. Urban history and culture data.
2	Existing condition of urban green space	1. Green space and relevant land use data: location, area and landscape structure of the existing various green spaces; location, area and degree of utilization of various cultural landscapes; location, area, rate of flow, depth, water quality and degree of utilization of the main water systems. 2. Technical and economic norms: Greening norm (area of park green space per capita, green coverage percentage of built-up area, greening rate of built-up area, average green space per capita, park green space service radius), the flow of visitors to park green space and landscape woodlands in ordinary days and holidays; Production green space area, nursery stock amount, type, standards, degree of self-sufficiency of the nursery stocks; Amount, location, age, and growth condition etc. of the ancient trees and precious woods. 3. Ornamental plants and animal data: Existing ornamental plants index, animal index; Status of main plant diseases and insect pests.
3	Management data	1. Management organization: Name, nature and sector (e.g. construction sector, agricultural sector or forestry sector); Organization set up, Regulation system. 2. Personnel situation: Number of staff (ratio of 10,000); Structure of employee hierarchy between professional staff, workers and technician etc. 3. Research on urban green space (including plants). 4. Budget and equipment 5. Urban green space maintenance and management condition.

ANNEX 5. NATIONAL NORMS FOR URBAN GREEN SPACE PLANNING AND DEVELOPMENT

Relevant terms

In China, there are special terms used for planning and management of urban green space. The most relevant terms are introduced in Table A5.1.

Table A5.1. *Main terminology concerning urban green system planning in China.*
Sources: Jia (2000, p.12-14); *Standard for Basic* (1998).

Term	**Definition**
Area of urban green space (*yuanlin lvdi mianji*) (m^2)	The sum of area of all public parks, neighborhood green spaces, green spaces in residential areas, green spaces owned by companies, green spaces along the roads, production green spaces, protection green spaces, scenic forests, and so on.
Greening rate (*lvdi lv*) (%)	In a certain region or area, the percentage of the total land use area for various green space types in the total area of the region or area.
Average green space per capita (*renjun lvdi mianji*)(m^2/person)	The average area of urban green space per citizen.
Green coverage (*lvhua fugai mianji*) (m^2)	The vertically projected area of the trees, bushes and perennial plants.
Green coverage percentage (*lvhua fugai lv*) (%)	In a certain region or area, the percentage of perpendicular projection of the total actual vegetation in the total area of the region or area.
Area of public green space (*gonggong lvdi mianji*) (m^2)	The sum of all the public green space in the built-up area.
Average public green space per capita (*renjun gonggong lvdi mianji*)(m^2/person)	The average public green area per citizen.
Park green space service radius (*gongyuan fuwu banjing*)(m)	The distance that the park can serve the people. From the park entrance to visitor's home.
Urban built-up area (*chengshi jianchengqu*)	In the city's administrative border, the previously developed area and public service or infrastructure covered area.
Urban planning area (*chengshi guihuaqu*)	In the urban, suburban and city administrative area, the area to be controlled by the plan for its construction and development.
Urban land (*chengshi yongdi*)	Its category is residential land, public facilities land, industrial land, warehouse land, intercity transportation land, roads and squares, municipal utilities land, green space land, specially designated use land, waters and miscellaneous.
Green line of a city (*chengshi lvxian*)	The planned outside border of the green space
Boundary lines of roads (*daolu hongxian*)	The planned border of the width of the road.
Building line (*jianzhu hongxian*)	The limitation line beside the road, which controls the outermost border of building or structure to the road.

Classification of urban green space

On 2002, the Ministry of Construction of the P. R. China published the 'Standard for Classification of Urban Green Space'. The classification of

urban green spaces is based on their functions. Table A5.2 shows the main categories based on this classification system.

Table A5.2. *Classification of urban green space in Chinese planning system.*
Source: *Standard for Classification* (2002).

Main Category	**Definition and subcategory**	
G1: Public park green space (*gongyuan lvdi*)	Open to the public, the main function is for recreation, with other functions, for example ecology, aesthetics, preventing natural disasters etc.	
	Comprehensive park (*zonghe gongyuan*)	Large scale green space with many types of facilities, suitable for many types of out-door recreation for the public. The sub-categories are: City public park (*quanshi xin gongyuan*) and regional public park (*quyu xin gongyuan*)(lower level than city but higher level than district).
	Community park (*shequ gongyuan*)	Green space with certain various facilities and certain recreation for a certain land area for residence. The sub-categories are: Residential district park (*juzhuqu gongyuan*) (service radius is 0.5-1.0km), residential quarter park (*xiaoqu youyuan*) (service radius is 0.3-0.5km)
	Specialized park (*zhuanlei gongyuan*)	Green space with a certain form and facilities for recreation. The sub-categories are: children's park, zoo, botanic park, historical park, scenic park, amusement park (greening rate no less than 65%), and others (greening rate no less than 65%).
	Belt park (*daizhuang gongyuan*)	Long green space with a certain recreational facilities along city road, embankment or river.
	Roadside green space	Outside of the land use for road, a piece of independent green space, including green space for roadside square, small green space along road (greening rate no less than 65%).
G2: Production green space (*shengchan lvdi*)	Nurseries providing trees, flowers, grass, seeds for city greening use.	
G3: Protection green space (Green buffer) (*fanghu lvdi*)	Green space in the city with functions for sanitation, partition and safety, including sanitation partition belt, road protection green space, green belt for high tension electricity corridor, wind break forest and partition green belt between city zones.	
G4: Attached green space (*fushu lvdi*)	In the urban development land, the subsidiary green space of land use other than green space. It includes green space in residential land, public facilities land, industrial land, warehouse land, intercity transportation land, road and square land, municipal utilities land and specially-designated land.	
	• Residential green space • Public facilities green space • Industrial green space • Warehouse green space • Inter-city transportation green space • Road and square green space • Municipal utilities green space • Green space in special land use	
G5: Other green space (*qita lvdi*)	Green space with direct influence on the quality of a city's ecological environment, citizens' recreational life, cityscape and biodiversity protection. It includes scenic area, water source protection area, suburban park, forest park, natural reservoir, scenic woodland, urban green buffer, wild life zoo/botanic garden, wet land and restored green space from disposal area etc.	

National norms

The most relevant national norm is 'Regulations for Norms for Planning and Establishment of Urban Greening' issued by the Construction Ministry at 1993. The main content, which is mainly quantitative norms, can be seen in Table A5.3.

Table A5.3. *Main content of 'Regulations for Norms for Planning and Establishment of Urban Greening' issued by the Ministry of Construction of the P. R. China at 1993.*
Sources: *Circular about issuing* (1993); Halik (2003); Jia (2000).

Norms		**Until 2000**	**Until 2010**
Average public green space per capita(m^2) (*renjun gonggong lvdi mianji*)	For cities with average built area per capita (*renjun jianshe mianji*) under 75 m^2 :	≥ 5	≥ 6
	For cities with average built area per capita between 75-105 m^2 :	≥ 6	≥ 7
	For cities with average built area per capita more than 105 m^2 :	≥ 7	≥ 8
Green coverage percentage (%) (*lvhua fugailv*)		≥ 30	≥ 35
*Greening rate (%) (*lvdilv*)	Of a whole city	≥ 25	≥ 30
	Of new residential area	≥ 30	
	Of old residential area	≥ 25	
*Greening rate of city road (%) (*daolu lvdilv*)	For major road	≥ 20	
	For secondary road	≥ 15	
Width of protection forest belt (m) (*fanghu lindai kuandu*) along river, sea, lake, and railway.		≥ 30	
*Greening rate of attached green space to urban work units (%) (*danwei fushu yongdi lvdilv*)	Average	≥ 30	
	Industry, warehouse and business centre	≥ 20	
	Industry with pollution, (In addition, protection forest belt)	≥ 30 (≥ 50m)	
	School, hospital, governmental institution, public recreational facility, military base	≥ 35	
Area of land use for nursery in total city area (%)		≥ 2	
To design green areas and Parks, refer to 'Code for Public Park Design' (*gongyuan sheji guifan*) issued by the Ministry of Construction of the P. R. China in June18,1992.		(CJJ 48-92)	

*The norms of greening rate for old built-up area can be 5% lower than the norms listed here.

Starting from 1992, China begins nominations for 'National Garden City'. In order to be named 'National Garden City', a city has to reach basic norms prescribed in 'Norms for National Garden City'. Both qualitative norms and quantitative norms are provided. The main quantitative norms are shown in Table A5.4.

Greening of urban roads is always an important part of urban green space planning and development. In 1997, the Ministry of Construction of the P. R. China issued norms for greening of urban roads, which is called 'Code for Planting Planning and Design on Urban Road' (CJJ 75-97). It provides

quantitative and qualitative norms for greening design of urban roads, roundabouts, squares and parking, as well as relations between road greening and other municipal facilities (e.g. power lines, underground pipe etc.) (*Code for Planting*, 1997). It states that the greening rate for roads should be defined when planning the boundary lines of urban roads (*daolu hongxian*) (Table A5.5). There are also quantitative and qualitative norms for planting the medium of urban road, as well as for roadside green space.

Table A5.4. *Main quantitative norms for 'National Garden City' of China.*
Sources: Jia (2000); Li (2002).

Basic norms for a National Garden City	**Location of the city**	**Large city**	**Medium city**	**Small city**
Average public green space per capita (m^2/person)	Sourth of Qinling Mountains and Huai River	6.5	7	8
	North of Qinling Mountains and Huai River	6	6.5	7.5
Greening rate (%)	Sourth of Qinling Mountains and Huai River	30	32	34
	North of Qinling Mountains and Huai River	28	30	32
Green coverage percentage (%)	Sourth of Qinling Mountains and Huai River	35	37	39
	North of Qinling Mountains and Huai River	33	35	37
Other norms for a National Garden City				
Greening rate of residential area (%)	New residential area	≥ 30		
	Old residential area	≥ 25		
Percentage in the length of a road (%)	With road planting	≥ 90		
	Reach greening standard	≥ 80		
Greening rate (%)	City main road	≥ 25		
	Parks	≥ 70		
Percentage of protection green space in total area of the city (%)		≥ 2		
Percentage of self-produced plants in total plants used for greening (%)		≥ 80		

Table A5.5. *Main quantitative national norms for road greening in China.*
Sources: *Code for Planting* (1997); Halik (2003); Jia (2000).

Greening rate (%) of urban roads	Landsccape road (*yuanlin jingguan lu*)	≥ 40
	Road with boundary lines wider than 50m	≥ 30
	Road with boundary lines between 40m and 50m	≥ 25
	Road with boundary lines narrower than 40m	≥ 20

ANNEX 6. DESCRIPTION OF ELEVEN GREEN SPACE DEVELOPMENTS (SUB-CASES) IN WEIHAI

1 Weihai Park

Figure A6.1. *Overview of Weihai Park.*
Source: Weihai Park Administration.

BACKGROUND AND PLAN

Located on the eastern coast of Weihai, Weihai Park was developed as the main part of an integrated urban re-development project; the park was developed together with a new city main road, South Haibin Road. It was a city key project from the end of 2004 to summer 2006. The total area of Weihai Park is 46.5 ha. As a belt park, its length is 3.2 kilometres, with an average width of 200 m (*Proposal for the*, 1999; *Re-examination of National*, 2003). The major part of Weihai park, South Hanbin Road and a tree belt with an average width of 50 metres on the west side of the road are situated on land claimed from the sea (Qi, pers.comm.).

Until the 1970s, Qingdao Road was the only north-south city road running along the eastern coast of the city. East of Qingdao Road there were coastal protection forests and white sand beach. Later on, industries replaced the protection forests, and fish farms were developed on the sand beach. In the late 1990s, the whole site resembled a large waste dump. During urban development, the city government decided to redevelop the whole South Haibin Road area. The purposes were to improve the transport function of the road, to optimize the coastal landscape and to improve the image and taste of the city. According to the project coordinator, it was necessary to redevelop this area and no opposing opinions from the citizens were heard from the planning stage to the end of the construction (Qi, pers.comm.).

The proposal for redevelopment of the South Haibin Road Area was selected through an open competition held by Weihai Construction Committee. The whole park design was supposed to follow five principles: 1. Culture principle: presenting sea culture through the squares and architectural style. 2. Science principle: presenting the old science history mainly in the Sea-Wisdom Area. 3. Participation principle: providing spaces for the needs of different groups of people. 4. Seeking novelty principle: providing sculptures of exotic plants for photography. 5. Amusement principle: using sculptures of animals and cartoons in Sea-Kids Area (*Proposal for the*, 1999). In the proposal, the park is organized into a series of squares. The squares were used to separate the long park site into smaller spaces for improved visitor experience, to present the theme of the park by forms, pavements and sculptures and to providing resting points and highlights of the park. The distances between the squares are 500-600 meters, a distance suitable for walking. Between the squares are mainly green areas and path systems that connect the squares. A long platform runs all the way along the eastern edge of the park, combining the functions of a quay wall and pedestrian walkway (*Proposal for the*, 1999).

PROCESS AND ACTORS

The development of the whole project was directed by a Project Director Committee, with the General Secretary of Weihai City Committee as the general director. Many departments of the city were involved in the project and the top leaders of various city departments were members of the Project Director Committee. Different sectoral projects were undertaken at the same time. The planning designs and construction processes of the different sector projects were interlinked. The Project Director Committee controlled and coordinated the whole process. Weekly meetings were held to discuss important aspects of the whole project. Daily short meetings were held in the early mornings to coordinate the immediate work and cooperation between different sector projects or different steps within the same sector project (Qi, pers.comm.).

Detailed designs were made up many times to adjust the winning proposal, even during the construction stage. Sometimes the changes were to fit the immediate local situation, but other times they were from spontaneous ideas of some individuals. “Everyone can have an opinion on how it should look” (Qi, pers.comm.). Specialists from other cities were invited to draw up the designs for the sculptures, architecture, artefacts and environmental art. In a book about the Weihai Park project, except for the technical issues, most of the contents introduce the design and the metaphor of the sculptures and squares (Liu, 2001). The planting design and construction were undertaken by Weihai Lvyuan Landscape Design Co. The planting design is said to be based on ecological theory as well as achieving visual effects. In Weihai

Park, big trees are used as the main structure, and landscape trees and bushes are used for decoration. The green belt on the west side of the Road was designed as woodland for better biodiversity (*Parks and greening, 2004*).

OUTCOME

"The result of the park development did not completely achieve our expectation, but there has been improvement of the urban environment (…). The time for the construction was too short—from the first day of earth work to the end of the construction was only about 500 days" (Qi, pers.comm.). Soon after the completion of the project (in the public propaganda) the highlight of the city image changed from the old images like Huancuilou Park and Liugongdao Island to Weihai park. The whole project won 'Luban Honour' in 2001, a national top honour for architectural and engineering projects. For the local citizens, the most often used areas in the park are the children's playground in the north of the park and the Cultural Square in the middle of the park. Although the managers have tried to arrange several events to promote the use of the park, daily use is not increasing (Liu, F.T., pers.comm.). Some factors that challenge the use of the park can be observed: first, most stretches of the park are far from residential areas; second, the busy traffic along South Haibin Road affects the accessibility of the park; third, service facilities are lacking in the park and nearby (Field observation, 2004 & 2006). The park is very carefully maintained as one of the highlights of Weihai city. As a coastal park, the maintenance of the nearby water body has also naturally become the park's daily task. Therefore the general hygienic condition of the seawater is also improved. To conserve water resources, about half of the irrigation water for maintaining Weihai park is 'grey water' produced by Weihai's 'grey water station'(Liu, F.T, pers.comm.). Figures A6.1-A6.3 show parts of the Weihai Park.

Figure A6.2. *Quay wall in Weihai Park.*
Source: Weihai City Park Administration.

Figure A6.3. *Path in Weihai Park.*
Source: Photograph by the author.

2 Haishang Park

Figure A6.4. *Lake area of Haishang Park.*
Source: Weihai Park Administration.

BACKGROUND AND PLAN

Haishang Park is comprehensive city park located on the eastern coast of Weihai city, further south than Weihai Park. It was a key project of the Economic Development Zone of Weihai city in 1999. The total area is 217 ha, including 97 ha green areas, 60 ha sand beach and 60 ha lake area (*Introduction of Haishang*, 2006).

A part of the park site was originally coastal protection forest planted in the 1950s. Most part of the park site was claimed by infilling the sea and former shrimp ponds. The purpose of developing this park was to improve the soft environment of Economic Develop Zone for attracting investment, to promote the image of this zone and to provide recreational space mainly for the residents of the Economic Development Zone. The park was planned in the Master Plan of 1994 and Urban Green System Plan of 1994. Considerations for developing this park arose mainly from the Economic Development Zone's needs. The design considered little of the overall green structure of the city. A designer made a draft design of the park. However, it was changed so much during construction that the finished park is very different from the original design. The draft plan is not traceable now (Hu, pers.comm.).

PROCESS AND ACTORS

The Department for Municipal Works from the Economic Development Zone, representing the Administrative Committee of Economic

Development Zone, is responsible for the development of the park. Haishang Park was built little by little on the site (Hu, pers.comm.). The development of the park took many peoples' suggestions and ideas from both professionals and leaders of the Economic and Development Zone. Learning from other examples and construction took place simultaneously. During the park development process, the project team had many study tours in China and abroad. The elements, styles and experiences they collected from elsewhere were used in the park. Many companies (e.g. Greening Company, Road Light Company and Road Company) under the Department of Municipal Works were involved in the construction. The construction was coordinated through the Project Directory Committee. There was good cooperation between different sectors, "like a big family". The main challenge for this project was the tight deadline. The construction of the first stage project started in March 1999, and opened to the public on October 21st, 1999, the 7 year anniversary of the Economic Development Zone. "Municipal works always connects with politics. They are always used as gifts to some big events, special dates or even some VIP visits" (Hu, pers.comm.). The second stage project was finished one year later.

OUTCOME

The style of the park is very different from the parks developed by the city. The central park area is a combination between organic form and regular form. It has 3 zones: recreational park in the north part, amusement park in the middle and lake & fishing island park in the south. The planting design of the recreational park section was learned from a Korean park, where groups of large and small landscape trees stand on the high points of the meandering meadow slopes. Exercise facilities were arranged within the woods and meadows. At the main entrance for the whole park, geometric squares and flower beds provide a meeting place. A sunken square provides space for dancing and exercise. There are also some amusement facilities for children and youngsters. A European-style arched gate stands at the end of the main entrance, providing a visual focus and a separation between busy activities in the park area and the sand beach area. The design of the lake and fishing island area was also learned from a Japanese fish garden in a Korean park. Water occupies most of this part. An island was built in the lake with a European style building in the middle, which is the main visual focus of the lake area and is used as a recreational centre with a restaurant. Bridges link the islands and separate the water into small spaces. Some activities related with water are arranged in this area, for example, boating and fishing (*Introduction of Haishang*, 2006; Field observations, 2004 & 2006).

Since the park was built, it has been used a great deal as a popular place for daily recreation. The users are both from residential areas nearby and from other districts of the city. Because of its variety of views, spaces and

facilities for different types of recreation, it attracts many visitors and has become one of the most often used places for daily recreation. House prices in the neighbourhood have increased considerably. The funding for management and maintenance of the park is mainly from the Economic Development Zone. The park also runs some small businesses for income. (Hu, pers.comm.; Field observations, 2004 & 2006). Figures A6.4-A6.6 show parts of Haishang Park.

Figure A6.5. *The main entrance of Haishang Park.*
Source: Weihai Park Administration.

Figure A6.6. *Beach area in Haishang Park.*
Source: Photograph by the author.

3 International Beach Park (Haijing Park)

BACKGROUND AND PLAN

The International Beach Park (Haijing Park) is located in Weihai High-tech Zone and along a stretch of the northern coast of Weihai. Its coastline is about 2800 m long. It has about 30 ha of sand beach, 17.8 ha green space and 1.6 ha pavement (including paths). The development of International Beach Park went through two stages: the 1st stage from November 2001 to May 2002 and the 2nd stage from the end of 2002 to May 2003 (*Parks and greening*, 2005).

Figure A6.7. *The central square of the International Beach Park.*
Source: Weihai Park Administration.

Until the early 1990s, the site of the International Beach Park was a deserted beach with no road access, and no fresh water or electricity supply. After the establishment of the High-tech Zone, the beach was developed for tourism use in 1992 and redeveloped again in 1998. In 2001, the Administrative Committee of the High-tech Zone decided to undertake a comprehensive redevelopment of this area. The purposes were to provide a more beautiful recreational environment for domestic and international tourists and to further improve the investment environment and reputation of the High-tech Zone (*Parks and greening*, 2005).

PROCESS

The development of the park was directed by the Administrative Committee of the High-tech Zone. For developing the park, all the earlier buildings and quay walls were demolished. Extensive earth work has been built and the sand beach was extended inland by an average 25-30 metres (*Parks and greening*, 2005). Green space was developed along the sand beach. The whole park includes five zones: 'listen to the wave in the green sea', 'ocean viewing platform', 'central square', 'sport space' and 'happy ocean'. The development of the park included the following projects (*Parks and greening*, 2005; *Re-examination of National*, 2003):

1. Planting large trees with their roots in 'transplanted' soil balls in certain areas of the sand beach.
2. Building wooden walkway on the sand beach.
3. Applying techniques from the American General Electric Company to set up powerful lights to illuminate the lawns, large trees, ocean and sand beach.
4. Setting up large, high-resolution television screen on the sand beach.
5. Applying national advanced canvas technique to build a sailing shape 'soft sculpture', which symbolises the High-tech Zone's enthusiasm for future development.
6. Setting up movable environmentally friendly shower system.
7. Park-style design of the parking lots.
8. Treatment of the paths with grit.
9. Setting up stone sculptures on the sand beach.
10. Greening by sowing seeds on the sand beach.

OUTCOME

The International Beach Park is a highlight of the High-tech Zone. It is the most often used beach in Weihai for both local citizens and tourists. Since it was developed, it has played an important role for the tourism development, speeding up the urbanisation process and improvement of the investment environment of the High-tech Zone. It is not only the 'window' of the High-tech Zone, but the 'window' of Weihai City to the world (*Parks and*

greening, 2005). Figures A6.7-A6.9 show parts of the International Beach Park.

Figure A6.8. *Beach with green space in the International Beach Park.*
Source: Photograph by the author.

Figure A6.9. *The wooden walkway in International Beach Park.*
Source: Photograph by the author.

4 Greening of Qingdao Road

BACKGROUND AND PLAN

Most of Qingdao Road is parallel to the eastern coast of the city. It is the city's access road from the south. Before Southern Haibin Road was developed in 2001, it was the only south-north main road of the city. Greening was part of the redevelopment of Qingdao Road, an annual key project of the city in 2005. The total length of road redevelopment was 13.3 kilometres (*Proposal for Qingdao*, n.d.).

Qingdao Road had been renewed once in 1998. After that, rapid urban development created higher demands on road surface condition, belowground municipal pipes and visual effects of the road. To renew and green some major roads had been an agenda for several years. Greening of Qingdao Road was listed in both the short term plan of Weihai's Urban Green System Plan of 2002 and Weihai's Road Greening Plan of 2004 (*Road Greening Plan*,

Figure A6.10. *Qingdao Road.*
Source: Weihai Park Administration.

2004; *Urban Green System*, 2002). The purposes of the redevelopment project were to improve the function of the city, to improve the living environment for the citizens and to improve the image of the city. The overall road redevelopment project for the most part included road surface redevelop-ment, municipal net-work redevelopment, road greening and lighting projects (*Proposal for Qing-dao*, n.d.).

The general plan of the Qingdao Road redevelopment was drawn up by a planning and design institute in Shanghai city. The plan contained the widths of the lanes, medians, pedestrian paths and road green space. and 20-30 meter-wide green strips were planned for both sides of the roads (*Proposal for Qingdao*, n.d.). The detailed design for road greening was prepared by the Weihai Lvyuan Landscape Design Co., which also participated in the Urban Green System Plan of 2002 and the Road Greening Plan of 2004. Because it was the most important public municipal project in that year, the mayor and party leader of the city directly approved the different types of proposals (Xu, pers.comm.). According to the proposal, the design for road greening was based on the following principles: 1. Transport safety: respecting the needs of motor vehicle users. 2. Ecology and sustainable development: respecting and making use of the immediate conditions and with long-term development and long-term effects in mind. 3. Respect for local conditions: making use of the immediate terrain, mainly using native vegetation. 4. Respect for human needs: taking care of the transition between the buildings and the road, provide facilities and space for human use. 5. Economic: considering the feasibility of the construction process taking into account selection of vegetation in the design process. The planting design attempted to enlarge the green belts as much as possible to fulfil the criteria of green cover for major city roads. The design attempted to create a theme series: from south to north, “welcome”, “dedicate” and “home”. The design also paid attention to the visual effect of four seasons, by using coloured leaf vegetation. Special focus was given to important road junctions (*Proposal for Qingdao*, n.d.). Figure A6.11 shows part of the detailed design for road greening of Qingdao Road.

PROCESS AND ACTORS

The Project Director Committee was assembled in December 2004 and organized the construction process. More than ten partners participated in the construction; they were responsible for different stretches (4 stretches) of the road or different types of municipal work or greening construction. The Project Director Committee held daily meetings to coordinate among partners. Larger meetings were held twice a week to discuss more general issues and deliver the messages from the higher level offices. Very few conflicts occurred between sectors. The conflicts were mainly over practical matters, such as some negative effects from other types of projects.

Normally the designers' opinions were well respected during the construction. The coordination in the whole project process was generally good (Liu, T., pers.comm.).

The greening construction team was a local firm 'Lvyuan Engineering Company'. The responsible landscape architects (from Weihai Lvyuan Landscape Design Co.) for the Qingdao Road landscape design were greatly involved in the construction process, making sure that the design concept was transformed on the ground (Liu, T.; Xu, pers.comms.). Greening construction is always the last step in a complex road project because it is on the surface. Althrough the other project processes were often delayed, the overall project deadline could not be postponed. In the construction process, the leaders voiced their own opinions (tree species or size of the trees) that were different from the design concepts. Some trees were changed even after construction had finished. Some negative opinions from the citizens were that the project was too expensive or the construction brought many inconveniences to the traffic (Liu, T., pers.comm.). The whole construction was finished on July 24, 2005. The Chinese president Hu Jintao visited Weihai the next day (Liu, T., pers.comm.).

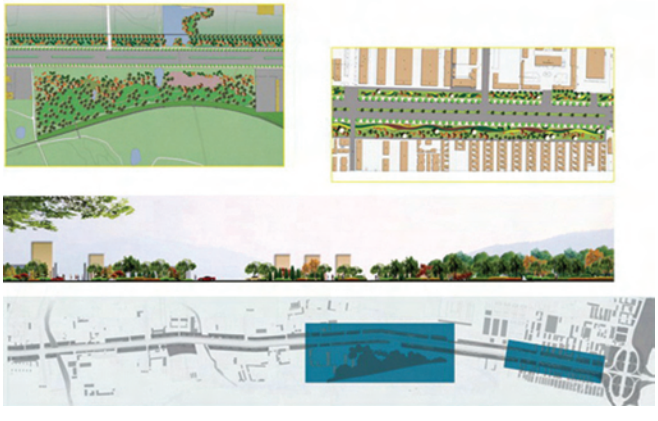

Figure A6.11. *Landscape design for part of Qingdao Road.*
Source: Weihai Lvyuan Landscape and Design Co.

OUTCOME

Although the green projects needs more time to achieve the expected effects, the result of the road greening project has generally achieved the goals in the design (see Figure A6.10). After the construction was finished, most of the citizens took a positive attitude. The native vegetation recovered well and

grows well. The species brought from southern areas do not grow very well, but they are the favourite types of some leaders. The median green strip had few crossing for pedestrians (in total 6 pedestrian crossings for the whole road, according to a report by the traffic police for traffic safety), so there was some damage to the vegetation in the median green strip by pedestrains. The maintenance team installed more paved median pedestrian crossings, but there is still some damage to the median green strip (Liu, T., pers.comm.).

5 Huanhai Road 2nd Stage

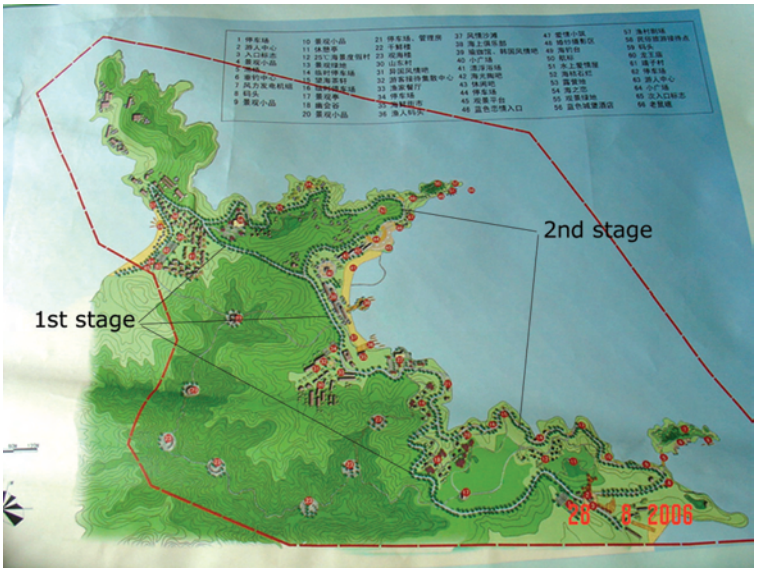

Figure A6.12. *Landscape plan for Huanhai Road 2nd stage.*
Source: Weihai Sunjiatan Town Government.

BACKGROUND AND PLAN

In 2002, the first stage of Huanhai Road (Coastal Road) was developed starting from Heqing in the east to Xiaoshidao in the west (the High-tech Zone). Its total length is 22 kilometres along the northern coast of Weihai city (*Re-examination of National*, 2003). When the 1st stage Huanhai Road was developed, the 2nd stage stretches were not in the plan. Huanhai Road 2nd stage stretch is located in the north-east corner of the 1st stage Huanhai Road (within Sunjiatan Town), where the 1st stage road precisely followed the coast. Huanhai Road 2nd stage was developed from April 2004 to June 2006. Its total length is 5.8 kilometres (*Introduction of Huanhai*, 2005) (see Figure A6.12).

The north-east corner of Weihai city, where Sunjiatan Town (Huancui District) is located, and its nearby coastal area has a reputation as “the back garden of Weihai city”. After his visit to foreign countries, the General Secretary of Weihai’s City Committee said that nowhere can compete with the beauty of the coastline of Sunjiatan Town. In August 2003, the city government started to encourage the Town to develop ‘Huancui North Sea Tourism Zone’ in this area. In 2004, Sunjiatan Town Government took on Huanhai Road 2nd stage project. The goal was to develop a landscape road (parkway) that goes along the coastline with views to the sea and later (the 3rd stage) with spots and facilities for developing tourism.

The major goal of the road greening was to recover the vegetation cover after the road construction on the slopes and to achieve “mountain, sea and forest in harmony”. The plant selection was based on “4 season green and 3 season flowers”. The greening project aimed to achieve a visual effect with ‘fine quality’ in a short time. For example, native climbing plants for road greening were suggested to gradually cover the damaged stone surface. However, the plants take 5-6 years’ growth to achieve a good effect. In order to achieve a quick effect, two complicated techniques for greening the hills were applied in the project. One is the earth-grid (*tu gong ge shai*) vertical greening technique. The technique is to fix steel cables in the stone surface, and then to hang on them many plastic nets with pressed earth inside; vegetation grows on the pressed soil. The cost for this part was 6 million RMB (equals about 0.55 million EURO) and green area was 1.3 ha. Another technique is the ‘Hanging Net Spray Seeds’ technique. The cost was 1.6 million RMB (equals about 0.15 million EURO) and the greening area was 0.8 ha.

PROCESS AND ACTORS

The project was a cooperation of the city government, Huancui District Government and Sunjiatan Town Government. Each of them put up one third of the funding. Sunjiatan Town Government took the major role in the project process (Pang, pers.comm.). There were some debates about whether the 2nd stage should be built (e.g. Pang; Wang, Z., pers.comm.). But after the construction, opposing opinions are rarely heard (Pang, pers.comm.).

The construction of the road started on April 2004 and was finished in late November, at a cost of 200 million RMB (equals 18.4 million EURO). On August 2004, open competition for road greening was held by the town government through the Chinese Construction Information Website. Four national design institutes were chosen from more than thirty applicants to participate in the competition (*Introduction of Huanhai*, 2005). The design of the 1st placed applicant was expensive. The design of the 2nd placed applicant (a local firm) was economical and fitted to the local situation. It was decided (possibly by the town) to use the 2nd placed applicant's proposal

and a more detailed design was prepared. However, the leaders (of the Huancui District or the City Government) were not satisfied with the proposal, because it seemed not achieve a visual effect with 'fine quality (*jing pin*)'. The 1st placed applicant was invited back to redesign. The leaders were directly involved in the decisions for design proposals and selection of techniques (Pang, pers.comm.). After six revisions, the proposal for road greening was decided upon in January 4, 2005. Soon after, the town government organized the Project Director Committee, which further organized the competitions for greening construction, hill engineering, project quality supervising, and materials. On February 2005, thirteen construction firms started the construction on the site. The cost for road greening was 300 million RMB (equals 27.6 million EURO). The newly constructed green area on both sides of the road is 5.9 ha. Greening of the hills in visible areas covers 34.5 ha (*Introduction of Huanhai*, 2005). The project was complete on June 2005 (*Introduction of Huanhai*, 2005).

Figure A6.13. *View from Huanhai Road 2nd stage.*
Source: Photograph by the author.

Figure A6.14. *Greening of Huanhai Road 2nd stage.*
Source: Photograph by the author.

OUTCOME

After it was developed, the visual effect of the project had achieved its general goal. The road is well integrated into nature. Now it is an important city route for receiving international and national guests. It is also often visited by tourists. However, because the facilities and services have not been fully developed, most visitors do not stay long. So the tourism outcome has not yet been achieved. The town government has received little benefit to date. It is believed that it will come later. The area has become famous for its many seafood restaurants. There had been already some local-culture-tour business. Among the activities for developing a coastal tourism resort, new housing areas have been also planned in some attractive locations through

international or national competition. In the development process, the administrations keep conservation of the tourism resource in mind. One example is that a housing area designed by a Korean developer was not approved because the density was too high, which would impair the natural landscape resource. Instead a temple with local culture is planned nearby (Pang, pers.comm.). Figures A6.13 and A6.14 show parts of the greening effect of Huanhai Road 2nd stage.

6 International Exhibition Centre

BACKGROUND

Weihai International Exhibition Center is located in the southern part of the central city, between Middle Haibin Road and North Qingdao Road. It is a public service building owned by the city government. It was developed to hold large exhibitions and trade and cultural events. The structure was supposed to be the new landmark building of the city. Greening its immediate courtyard was included in the project. Total land use is 5.5 ha. The building occupies 2.38 ha. Its green space is 2.43 ha (*Introduction of International*, n.d.).

PROCESS AND ACTORS

The architectural design and the overall layout of the courtyard were prepared by a design firm from Shanghai (Xu, pers.comm.). The landscape design was made by Weihai Lvyuan Landscape Design Co. Landscape design was mainly to select and arrange vegetation and to deal with the slopes between the courtyard and the roads. The landscape design was started in the spring 2005, when construction of the building was half finished. Since the area is small, the design was made quick and simple (see Figure A6.15). Consideration was given to combine the greening of International Exhibition Center with the greening of Qingdao road. The two projects were constructed at the same time, so they are well integrated. Since the green space in the courtyard is relatively small, the construction is quite simple. The construction started in December 2004 and came into use in August 2005.

To the west of the Center, there is a planned 100 metre wide green axis linking the Center and Likou Mountain. The green axis is part of the planned green structure of the city, which use a green corridor to make a connection between the mountains and the sea. Initiated from the Weihai Lvyuan Landscape Design Co., the green axis was designed together with the courtyard of the International Exhibition Center. The design of the green axis also considered the location and the form of the Center. However, because the green axis was not put on the urgent agenda by the city

government, it has not yet been developed (Xu, pers.comm.) (see Figure A6.16).

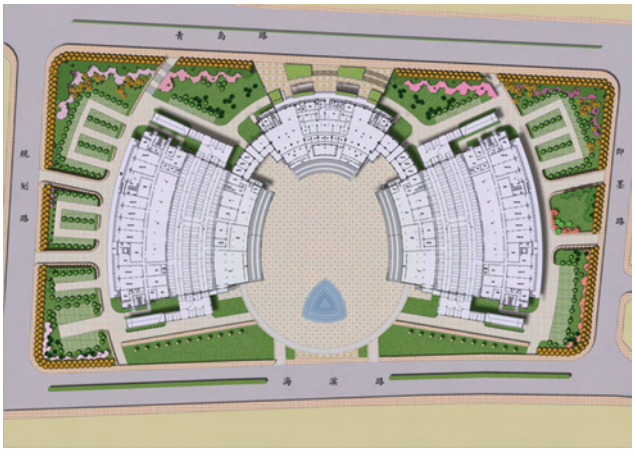

Figure A6.15. *Landscape design for the International Exhibition Centre.*
Source: Weihai Lvyuan Landscape Design Co.

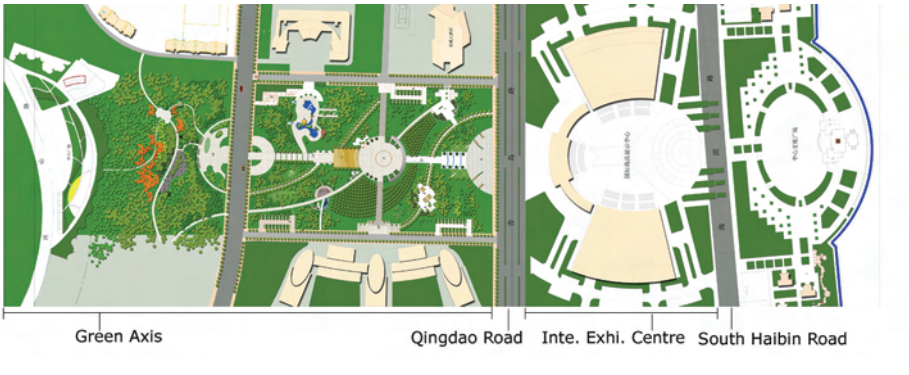

Figure A6.16. *Landscape design for the Green Axis in relation to the International Exhibition Center.*
Source: Weihai Lvyuan Landscape Design Co.

OUTCOME

The effect of the green space of the International Exhibition Center is relatively good. The green space between the exhibition hall and Qingdao Road in particular has played a role in connecting the two spaces and serves for both courtyard green space and road green space. Since 2005, the annual

International Festival for Human Settlement has been held in the centre in September every year. Figures A6.17 and A6.18 show parts of the courtyard green space of the International Exhibition Centre.

Figure A6.17. *Courtyard of the International Exhibition Centre.*
Source: Photograph by the author.

Figure A6.18. *Greening of the courtyard of the International Exhibition Centre in relation to Qingdao Road.*
Source: Photograph by the author.

7 Shandong University Weihai Campus

BACKGROUND AND PLAN

The campus is located in the north-western part of Weihai city (in High-Tech Zone), next to the north coast. Hills by the coast extend into the northern part of the campus. A part of the campus site was originally wetland. Some coastal protection forests with pine trees are located within the campus. The general plan of the whole campus was made in 1984 by the Planning Institute of Tianjin University. During more than 20 years of the general plan (see Figure A6.19). The landscape design of the campus was not very detailed in the general plan. In the plan, the former woodlands were to be removed. The early part of the 20 year development mainly focused on building development.

Green space development within the campus started mainly after 1997. By that time, environmental awareness had greatly improved and the major building construction had been finished. The purpose of green space development of the campus was to create a characteristic garden style campus and to create a campus culture and study atmosphere through green spaces. The general ideas of the green space development are: 1. respect for the site terrain and preserving the protection forests, hills and ponds. 2. Using native vegetation and trying to achieve “3 seasons with flowers and 4 seasons with green” effects. 3. Creating some man-made scenery for cultural functions and for use.

Figure A6.19. *Overview of the plan for Shandong University, Weihai campus.*
Source: Photograph by the author from the plan for Shandong University Weihai campus.

PROCESS AND ACTORS

The Construction Department of the University organises and directs the whole process of green space development. The design and construction of the campus green space have been through several stages. The Construction Department provided main concepts for development. It asked Weihai Lvyuan Landscape Design Co. to make the detailed landscape design. Many leaders of the University are involved in the design process through commenting on the proposals. Construction of green spaces was conducted mainly by external construction firms selected through competitions. Another department of the university, 'Service Department', is responsible for the maintenance of the green spaces on the campus (Ji, pers.comm.). According to the landscape architect for the campus green spaces, the construction often did not follow the landscape design and the concepts and quality of the design could not be achieved. The main reasons were: first, the budget for green space is often cut down to minimum after buildings are developed; second, there are different ideas between the designers and the project manager and leaders from the university. Landscape architects suggest more naturalistic style, while the leaders prefer more highlights or those with 'fine quality' (Niu, pers.comm.).

OUTCOME

Although greening projects of the campus is still going on, the campus has already become one of the most beautiful courtyards of Weihai city. Several former costal pine tree protection forests have been preserved. Necessary resting facilities were added. Ponds in the low areas near the main entrance were developed into two lakes. Theme gardens were also planned to reflect the campus culture. The students get most benefits from the green environment. They enjoy living in a beautiful environment. It is one of the reasons many students from other cities are attracted to this university. Although the campus is a semi-public space, many citizens nearby also use it for exercise and getting fresh air. Figures A6.20 and A6.21 are examples of green space in the campus.

Figure A6.20. *Garden in Shandong University, Weihai campus.*
Source: Photograph by the author.

Figure A6.21. *Woodland in Shandong University, Weihai campus.*
Source: Photograph by the author.

8 Mingcui Park

BACKGROUND AND PLAN

Mingcui Park was developed by Goubei Villiage, located in the east end of the Economic Development Zone. It faces the ocean to the north, and is circled by mountains in the south. With urban development, especially the establishment of the Economic Development Zone, Goubei Villiage has been included in the city's administrative border. Mingcui Park is located on Goubei Village's Eastern Hill. It was developed from March 2005 to March 2006 (*Greening situation of*, n.d.).

The development of the Park was based on some woodlands originating from 'duty-tree-planting'. After the village changed to urban status, both its infrastructure and function faced the need for transformation. After 2003, the village started to afforest its hills formerly used as farmland. In 2004, the village's wish to afforest the hills met the city government's need to find a 'duty-tree-planting' base for the city level administrations. The 'duty-tree-

planting' activities by both the government officers and the villagers turned the barren hills green (*Greening situation of*, n.d.).

Figure A6.22. *Overview of the scheme for Mingcui Park.*
Source: Photograph by the author from the 3D presentation of the scheme for Mingcui Park.

Having given up farming, the villagers have increasing needs for recreation. The old village did not have any space for exercise. The villagers had to run along the main roads, which resulted in one death and one injury in recent years. The park was originally for providing recreational space for the villagers. The idea of developing the park was supported by the Administrative Committee of the Economic Development Zone. It suggested an even broader scheme to develop the park as a part of a bigger tourism resort. Inspired by this idea, the village government identified the tourism industry as its future focus, which was also aligned with the Zone's policy of developing an "Ecological Coastal Garden City". Ecology is considered highly in the development agenda. It is generally understood that planting more trees will improve the ecological environment of the village (Liu, X.C, pers.comm.).

Although a proper plan seems not to exist, there is a clear scheme for the development of the park and the tourism resort. A description of this scheme and a 3D presentation shows that the park is the first stage project of a tourism lodge (see Figure A6.22). The second stage will be a tourism village with some courtyard villas for hotel, business centre, restaurants and other facilities for tourism. Mingcui lodge is planned to develop a tourism farming zone, a fishing and hunting zone, and a recreational zone. It aims to be included as a tourist attraction within the provincial tourism resource listing. Application has been made to the province. Most of these ideas for future

development came from the General Secretary of the village (*Greening situation of*, n.d.; Liu, X.C., pers.comm.).

Process and actors

In 2005, the village government invested 8 million RMB (equals about 0.74 million EURO) to develop Mingcui Park on the Eastern Hill. The General Secretary of the village's Party Committee devoted himself to the development of the whole project. He is especially enthusiastic towards greening. Because of his fondness of southern Chinese style traditional buildings, a building construction team from south China was invited directly to develop this park. This building team is good at constructing traditional Chinese architecture such as pavilions. When the buildings and roads were built, the park was created. The park was planned in 2004. The construction of the park started in March 2005 and was finished in March 2006 (Liu, X.C., pers.comm.). According to the General Secretary of the village, there have not been many difficulties in developing this park. When money is available, the park is developed. The cost of the traditional wooden building structures is one third higher than that of a modern building. The pebbles used for the pathway pavement were *yuhua* stone from Nanjin City, a famous fine pebble for decoration. He commented on the higher investment of the park: "Whenever we build, we should develop 'fine quality project'" (Liu, X.C., pers.comm.).

Outcome

Six traditional Chinese buildings were constructed, including an entrance archway, two pavilions, a tower and a resting corridor and a manager house. The roof structure of the buildings was wooden in the style of the Qing dynasty. Bridges were constructed over an existing lake at the foot of the hill. Hard surface was laid on the former earth-surface roads on the slope of the hill, allowing cars to drive up to the resting and viewing courtyard on the top of the hill. A small pathway system has been developed with access to each resting building. Its pavement technique is also the pebble inserted footpath used in traditional Chinese gardens. Two squares have been built near the entrance to the park, one of them with exercise facilities. Vegetation of the park is mainly based on the result of afforestation activities. Some landscape trees were planted by villagers near the newly developed buildings.

The park is now managed by the village. A 27-person greening team (the village's elderly) undertakes the daily maintenance. Since the park is still in a primitive condition, maintenance work is mainly on the vegetation. The space is an open park, now mainly used by the villagers for dancing, exercises and enjoying the cool air. The villagers are happy with the park. After the whole project is finished, the park is planning to apply an entrance fee to the broader public. After the park was built, the housing price of the

surrounding real estate near the village increased greatly. When asked whether the benefits to all of Weihai city had been considered when developing the park, the General Secretary of the village said that “no, because it is the mayor’s headache.” The villagers respect their leader, because he works hard for the future development of the village. He visits the construction site everyday. According to the villagers, the park could not have been developed if he had not prioritised this issue. They also believe that the development will now benefit the village over the long term (Anon. villager, pers.comm.). Figures A6.23 and A6.24 show part of Mingcui Park.

Figure A6.23. *View of Mingcui Park.*
Source: Photograph by the author.

Figure A6.24. *Afforested slope in Mingcui Park*
Source: Photograph by the author.

9 Shuangdao-Likou Mountain Forest Park

BACKGROUND

The planned area of Shuangdao-Likou Mountain Forest Park is composed of 2 separated areas with one and a half kilometre distance between them, viz. Shuangdao National Forest Park and Likou Mountain area. The total area is 2477 ha (*General Plan for*, 2002). The Forest Park has not been developed yet.

Shuangdao National Forest Park is located in the northwestern part of the central city, facing the Yellow Sea. It was originally a state-owned forest station. The pine-tree forests were planted in the 1950-60s, mainly as a part of the regional coastal protection forest belt. In 1993, it was named a National Forest Park, both for better protection of forest resource and for tourism development. For some years, it was used as a beach park because of the high quality natural sand beach in this area. In 1994, the land jurisdiction was mistakenly changed from the Forestry Bureau to the Administration of Huancui Provincial Tourism Resort Zone. In 1995, the land jurisdiction was

returned back to Forestry Bureau. However, the local government developed fish ponds in this area and the site for tourism resorts was damaged and deserted (Song, pers.comm.).

Likou Mountains (with natural vegetation cover) is a series of mountains to the south of the central city. The new city development has encircled Likou Mountains into the green core of Weihai city. Much of the land of Likou Mountains is collectively owned by the local villages. By 2002, a tourism resort was developed by the local villages on one of the hills, Xianguding Mount (375 meter above the sea level), which is on the eastern side of Likou Mountains. It includes a Buddhist temple on top of Xianguding Mount and several temple buildings along the stone foot path to the temple. Since it was built, Xianguding Mount has often been used by the local citizens for religious activities and temple festivals. Xianguding Mount is also a good viewpoint over the central city of Weihai and the whole Weihai bay, including the historical navy base Liugongdao Island. The areas on the western side of Likou Mountains have not been developed for tourism. Villages in the Likou Mountains, especially in the western valleys are used to cultivate peach trees. In recent years, more and more local citizens have visited Likou Mountains for the peach culture; however this is limited to families with cars. Some citizens have bought cottages from the villagers to build summer villas. There is an old foot path between the western part of Likou Mountains and Xianguding Mount in the eastern part, but it is only accessible in dry seasons. Except for Xianguding Mount, the other parts of Likou Mountains and Shuangdao Forest Park are not accessible by public transport (Song, pers.comm.).

Shuangdao National Forest Park and Likou Mountains are not physically connected. There is only a river flowing from Likou Mountains down to Shuangdao National Park. The idea of joining Likou Mountains area with Shuangdao National Forest Park was initiated by Forestry Bureau of Huancui District in 2000. Officially, the border of Shuangdao National Park was expanded to include the Likou Mountains area. The purpose of this development was mainly to develop and make use of the forest resource—to protect the ecological resources, to provide a recreational place for the citizens and to develop tourism. The organizer and planners are aware of Likou Mountains' important ecological function and city image function for Weihai. The existing Xianguding Mount is already a provincial tourism resort. After joining Shuangdao National Forest Park, the whole Likou Mountains area is to be up-graded to a national tourism resort (*General Plan for*, 2002; Song, pers.comm.). Figures A6.25 and A6.26 show the existing situation of the site for Shuangdao-Likou Mountain Forest Park.

PROCESS, ACTORS AND PLAN

In 2002, in the name of the Huancui District Government, the Forestry Bureau of Huancui District coordinated the planning process. A tourism plan was prepared cooperatively by the Forestry Bureau of Huancui District and Forestry Survey & Planning Institute of Shandong Province. The plan has been through evaluations by experts and has been officially approved by the State Forestry Administration. Although the plan has not yet been implemented, it plays a role in overall control. For example, a proposal for building a temple in Likou Zone was rejected because it was not a part of the plan. The preparation of this plan did not refer to the Master Plan of Weihai. The planning organizer believed that this plan is not much related to the Master Plan. "The Master Plan mainly focuses on planning land use for development, while the related land use of this plan does not belong to that land use type" (Song, pers.comm.).

The plan identifies different zones in the area, for example Landscape Resource Development Zone, Ecological Protection Zone, and Surrounding Area Buffer Zone. It is proposed that the development focuses mainly in the Landscape Resource Development Zones. The zone in Shuangdao Bay area is related to water recreation. The zones in Likou Mountains are then related to tourism agriculture, forest village, folk-culture village and temple tourism. It is proposed the western side of Likou Mountains be connected with Xianguding Zone on the eastern side of Likou Mountains. Two stages are suggested for the implementation of the plan. The first stage is from 2003 to 2005. The projects are to develop Shuandao Bay Beach Park, to redevelop the existing tourism spot in Xiangu Mount Zone, to renew Puzhao Temple, to develop Luoying Lake Tourism Village (wooden cottages) and to construct the foot path around Luoying Lake Tourism Village. The second stage is from 2006 to 2008. The projects are to improve the service facilities in Shuangdao Wan zone, to develop Xiangu Mount Folk Culture Village and to develop Likou Mountain tourism village (*General Plan for*, 2002). Since the ownership and jurisdiction of the whole planned area belong to different organizations and villages, it is proposed that the development and management of different zones have different partners. The principle is "who invests, who will then manage it and get benefits". According to the organizer of this plan, the main challenge to implementation is the lack of funding. Therefore, the plan has not been implemented yet (Song, pers.comm.).

The villages around Xianguding Mount have already seen the benefits from tourism development. They are more consciously involved themselves in protecting the forests and mountains. There is also public awareness of protecting forest resources. For example, the Forest Bureau renewed some trees in Shuangdao Forest Park as part of a forest regeneration program; the renewal involved converting the woodland from a single species structure to

mixed species structure. The opposing opinion of the citizens was reported through the Weihai Daily newspaper, and the People's Congress of Weihai city took action to investigate the case. The debate was published in the Weihai Daily (Song, pers.comm.).

Figure A6.25. *View of west side of Likou Mountain.*
Source: Photograph by the author.

Figure A6.26. *View of east side of Likou Mountain (from Xianguding Mount).*
Source: Photograph by the author.

10 Haishang Mingzhu Residential Area

BACKGROUND AND PLAN

Haishang Mingzhu residential area is located on the east coast of Weihai city, north of Haishang Park. The site was developed on land claimed from the sea. Haishang Mingzhu residential area is a new dwelling area developed from winter 2001 to winter 2002 (Chen, pers.comm.).

It was co-developed by a private real estate company 'Changqing Real Estate' and the Administrative Committee of the Economic Development Zone. The Economic Development Zone owns 6 buildings with more than 100 flats. With its special location in the middle of the park belt along the eastern coast of Weihai, the project must have support from both the Economic Development Zone and the city. The size of most of the flats is 150 square meters. There are flats with more than 200 square meters. According to Weihai's criteria for green coverage in new residential area, its green coverage percentage should be more than 35 %. Furthermore, the market also promoted a green living environment. This area was aimed to be developed for high standard housing. A green environment is an important factor that contributes to the quality. The director of the real estate company would like to invest considerably into the greening. The main purpose is to have a better real estate sales.

Figure A6.27. *Landscape plan for Haishang Mingzhu Residential Area.*
Source: Flemming Environment (n.d.).

The design of the residential area was an integral design, including architectural design and environmental design (prepared by Shanghai Fleming Environment, USA) (see Figure A6.27). Seen by the locals, the original environmental design was close to Suzhou style and not very suitable for the local conditions, especially the selection of vegetation. The greening manager was involved a great deal in the revision of the design. The final greening proposal took in many of the local professionals' suggestions about vegetation selection. The main greening concept was to achieve "4 seasons green, 3 seasons with flower". "Most of the common local trees are used, in total 134 species. Large trees are also used to adjust the micro-climate, a decision made from an ecological point of view. Trees were bought from other places and transplanted" (Chen, pers.comm.).

PROCESS AND ACTORS

The project was decided upon in 2000. The construction started in winter 2001. The building construction was finished in late spring 2002. A manager for the greening tasks of this area was hired in July 2002. The greening manager thought that a green environment would raise the house price. Because it was not the planting season, meadows were developed first to achieve a quick green effect by October 1 (the National Day of P.R. China), 2002. As soon as the environment was seen with green, the house prices increased by 280 RMB per square meter (equals to 25.8 EURO). This early effect motivated further green space development of this area (Chen, pers.comm.).

The green space construction was assigned to Landscape Engineering Company of the Economic Development Zone, the same construction team

that developed Haishang Park. From October through the whole winter, more trees were planted in the site. During the construction process, the construction team and the green manager asked for meetings with the designers from Shanghai when necessary. The main issues were about changing of the plan. If the change did not affect the main concept of the design, the designer normally respected the local team's suggestions. There were four meetings between the designers and the local team. The developer from 'Changqing Real Estate' also has his idea for the greening of this area. He imported palm trees and planted in the entrance square, which is very different from the design concept. However, these foreign trees were unable to survive the coastal climate (Chen, pers.comm.).

OUTCOME

At the time it was developed, the green quality of this area was one of the best among Weihai's residential areas. After the whole residential area was put into use, the maintenance tasks were handed over to a Property Management company from Beijing. The residents each pay 0.98 RMB (equals 0.09 EURO) per square meter maintenance fee (the highest in Weihai), including greening, cleaning and safety. According to the greening manager, the residents are satisfied with the living environment. "This area resembles a garden-like courtyard integrated with Haishang Park and the planned Yuehai park" (Chen, pers.comm.). However, Haishang Mingzhu residential area is actually an independent courtyard with fenced walls and guards at the entrances. Its road system and green spaces are completely separated from its surrounding park belt, and it is not accessible to citizens who are not residents in this area (Field observation, 2004 & 2006). Figures A6.28 and A6.29 show parts of green space in Haishang Mingzhu Residential Area.

Figure A6.28. *Green space in Haishang Mingzhu Residential Area.*
Source: Photograph by the author.

Figure A6.29. *Green space in Haishang Mingzhu Residential Area.*
Source: Photograph by the author.

11 Huaxia Pharmaceutical Ecological Park

BACKGROUND AND PLAN

Huaxia Pharmaceutical Ecological Park is located at the foot of the east side of Likoushan Mountains, and at the north-west corner of the Economic Development Zone of Weihai. The total area of the Park is more than 200 ha**.** It comprises a pharmacy industry, a technical school and a hotel village, which are situated between the lakes and valleys of the hilly land. The Park is still under planning and development (Wang, M.L, pers.comm.) (see Figure A6.30).

Since 2003, a Weihai private enterprise (Huaxia Group) has started to invest and develop the Park. The total investment is 6 billion RMB (equals about 0.56 billion EURO). Most of the land was deserted farmland or protected woodland on the hills owned by several local villages. Huaxia Group reclaimed some parts for construction and rented other parts (non construction land use) for 50 years. The purpose of developing this Park is to establish a large ecological and environmentally friendly pharmaceutical industry, and to develop tourism within the Park as a future industry of Huaxia Group. In addition, the director of Huaxia Group has also taken into consideration benefits this development will bring to the general environment of Weihai city and to future generations. “Ecological environment is our main focus in developing this Park” (Wang, M.L, pers.comm.).

The development of the Park has been mainly based on the original terrain. Ponds have been developed into lakes decorated with stones, bridges and small buildings. All the lakes are connected. They play a role in water storage in rainy seasons. Former vegetation on the hills has been left in place. Some barren slopes have been afforested. Several small resting pavilions are planned for the hills. The Park also includes

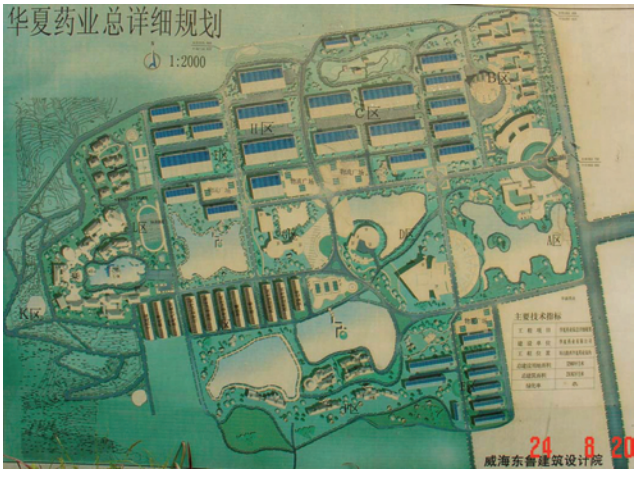

Figure A6.30. *Overview of the plan for Huaxia Pharmaceutical Ecological Park.*
Source: Photograph by the author from a poster on the site.

the site of an ancient temple with several ancient trees. It is planned that the temple will be reconstructed and its surrounding environment recovered, based on which a tourism site will be established. A golf course is planned for development within the Park. Many of the earlier ideas for developing the Park come from the General Director of Huaxia Group, who is a representative of the People's Congress of China. "What he does is not necessary for economic benefits. He would like to improve the general environment and tourism for the Zone, the City and society, and leave something for the next generation. Much of the current investment can not produce economic benefits (in the short term)" (Wang, M.L., pers. comm.).

PROCESS AND ACTORS

Planning and design of the park and its different zones and buildings were prepared by planning and design firms from big cities, e.g. Beijing. Plan proposals and permissions for construction need to be approved by the City Planning Bureau and the Construction committee. The applications are first reported to the Administrative Committee of the Economic Development Zone, which is responsible for further coordination with the city departments. According to the manager of the park development, they as developer have good communication with the Zone's government. Since the Park is the biggest enterprise in the Economic Development Zone, the development of the Park will also contribute to improving the investment environment of the Zone. The leaders of the Zone often visit the Park and give support and suggestions for its development. For example, inspired by a leader of the Zone, the Park decided to develop a golf course within a valley (Wang, M.L., pers.comm.).

OUTCOME

By 2006, the Park had assumed its early shape. The employees are satisfied with their working environment. Whenever there are friends coming, they also bring them to the Park. They all feel proud that they work in a beautiful environment. They also like to be involved in the development of the Park. In busy seasons, they assist the Park's gardeners (about 60 persons) in maintenance and planting trees(Wang, M.L., pers.comm.). Figures A6.31-A6.34 show parts of the Park.

Figure A6.31. *Overview of Huaxia Pharmaceutical Ecological Park.*
Source: Photograph by the author.

Figure A6.32. *Hotel area in Huaxia Pharmaceutical Ecological Park.*
Source: Photograph by the author.

Figure A6.33. *Lake in Huaxia Pharmaceutical Ecological Park.*
Source: Photograph by the author.

Figure A6.34. *Hill in Huaxia Pharmaceutical Ecological Park.*
Source: Photograph by the author.

ANNEX 7. PUBLIC ACTORS AND THEIR ROLES IN URBAN GREEN SPACE PLANNING AND DEVELOPMENT IN WEIHAI

City Council of Weihai *(Weihai shi zheng fu)* and the ***Chinese Communist Party Committee of Weihai city*** *(zhong gong Weihai shi wei yuan hui)* (the City Committee) play the leading role in overall urban greening of Weihai city. According to the planning law, the Master Plan of a city, district plans and sectoral plans should all be approved by the City Council. (The Master Plan of Weihai needs to be finally approved at the provincial level). The City Council also officially approves large or important urban development projects (e.g. Sui, pers. comm.). The Chinese Communist Party Committee of Weihai city heads the political system of Weihai. It has several complex functions, for example, producing propaganda for the leading ideology and appointing and dismissing politicians. It is beyond the scope of this study to explore the details of the Committee's work. In reality, the City Committee exerts political power over almost all decision-making processes, including both administrative and professional aspects. It is more powerful than the City Council. Its top ***politician***, the General-Secretary of the City Committee, is often called 'the number one man' of the city. He often plays an influential role in promoting and securing the annual key projects of the city (e.g. Qi; Wang, pers. comm.). The City Committee also leads the organization of the Greening Committee of Weihai.

City Construction Committee of Weihai (*Weihai shi jian she wei yuan hui*) is a functional body of the City Council. Its scope of power extends over the entire city region. The Committee organizes, coordinates, supervises and manages overall urban construction and development of, for example, municipal facilities, urban green space, and real-estate (Cai, pers. comm.). Its major responsibilities include: implementation of policies and regulations for the construction sector at the national and provincial levels; preparing and implementing local policies and regulations; integrative management of the implementation stage of urban construction; participating in developing plans for the annual key projects of the city, and then coordinating and solving major problems in their construction process; managing the professional market including competitions, qualification of the firms and construction quality control; conducting other tasks given by the City Committee and City Council (*Organization of the*, 2007).

The City Construction Committee plays a central role in urban green space planning and development of Weihai city. It is mainly responsible for the implementation stage of plans and policies. Representing the City Council, it can coordinate and mobilize the relevant departments of different sectors and in different districts for the planning and development tasks on a city scale (Cai, pers. comm.). For example, it is the City Construction

Committee that coordinates and organizes Weihai's actions and process for applying for the 'National Garden City' title (e.g., Huang, pers. comm.). The City Construction Committee is involved in almost all of the annual key projects of the city (*Arrangement opinions for*, 2004). Until its dissolution, the Park Administration supported the City Construction Committee and conducted concrete tasks associated with urban green space (e.g. Huang, pers. comm.).

City Park Administration of Weihai (*shi yuanlin lvhua guanlichu*) was a governmental department that took charge of the development and management of urban green spaces of the central zone of Weihai city—Huancui District. It reported to the Construction Committee of Weihai. With a low status in the political hierarchy, it was a functional body of the City Council. Even in the Huancui District, the Park Administration was not responsible for all green space. The green areas in the hills were managed by the forestry sector. The Park Administration's responsibilities included: suggesting annual green projects to the Construction Committee; management and maintenance of the public green space (except for green areas on the hills) within Huancui District; and conducting greening tasks given by the Construction Committee and the city government (Huang, pers. comm.).

Different sections and semi-public companies within the Park Administration conducted the design, construction, management and maintenance of green spaces (Huang, pers. comm.). According to a local planner, the Park Administration was actually a 'Park Company'—it had almost lost its function of green space management. Fully occupied with tasks of design, construction and maintenance of green projects, it no longer had time and resources for green space management. For example, the task of making green maps should belong to the Park Administration. However, except for the green map made for the Urban Green System Plan of 2002, very little work has been done towards registration of urban green space (Du, pers. comm.). This partly explains why in August 2006, the larger part of the Park Administration was privatized, and its administrative power was moved to a section under the Construction Committee (Qi, pers. comm.).

City Planning Bureau of Weihai *(Weihai shi gui hua jv)* is a functional body of the City Council. Until 1992 it belonged to City Construction Committee, after which it became an independent organization. The party committee of the City Construction Committee leads the political network of the City Planning Bureau. Therefore the Construction Committee has still more political power than the City Planning Bureau. Its scope of power extends over the entire city region (Du, pers. comm.). The Planning Bureau's responsibilities include: implementing urban planning policies and

regulations at the national and provincial levels; preparing local urban planning policies and regulations, and then organizing their implementation, organizing the planning process of the Master Plan of Weihai, district plans and sectoral plans, participating in the feasibility evaluation of large-scale development projects and annual development plans, managing urban planning tasks and their implementation, authorizing various certifications for all urban development projects, participating in defining the size and land use for urban development, and conducting other tasks assigned by the City Committee and City Council (*Organization of the*, 2007)

The City Planning Bureau plays an important role in the urban greening process. It is responsible for all the statutory planning activities. All sectoral plans should be verified by the City Planning Bureau before being passed on for approval. If there are conflicts between different sectors, the City Planning Bureau is responsible for overall coordination. The City Planning Bureau is also responsible for approving all the development projects by evaluating the proposals according to the existing plans. Important projects need to be reported to the City Planning Committee and City Council for approval. Before start of construction activities, the City Planning Bureau is responsible for defining the red line of building and road construction, and green line of road greening and green space construction (Sui, pers. comm.).

City Planning Committee of Weihai *(Weihai shi gui hua wei yuan hui)* is a decision-making, supporting body of the City Council. The director of the City Planning Committee is the mayor. Its members include both experts in various fields and officials from various government sectors (Cai; Sui, pers. comm.). Before plans are officially approved by the City Council, they should be discussed and approved by the City Planning Committee. Projects that are involved in a formal district plan should be approved by the City Planning Committee. Projects in very important areas should also be approved by the City Planning Committee. In general, plans and projects that need to be approved by the City Council should be approved by the City Planning Committee first (Sui, pers. comm.).

Forestry Bureau of Weihai *(Weihai shi lin ye jv)* is a functional body of the City Council. Its scope of power covers the entire city region. It has sub-departments at different levels—city level, district/county level and small town level. The mountains, forest stations and orchards in the city region all fall under the administration of the City Forestry Bureau (Li, pers. comm.). The superior of the City Forestry Bureau is the Chinese State Administration of Forestry, which follows a professional line different from that of the Construction Ministry. Its policy is to preserve the existing forest resources, afforestation and to improve the forest cover. Instead of creating parks and public open spaces, the City Forestry Bureau contributes much through

greening and managing the hills. The main function of the hill forests is the protection function. Most forests in Weihai are open to the public (Li, pers. comm.).

The City Forestry Bureau plays an important role in urban greening, as most of the green areas of Weihai are forests on the hills and forest stations, which are under administration of the City Forestry Bureau. In recent years, the national policy on urban greening increasingly has emphasised the ecological environment. The forestry sector has become more active in urban greening. For example, the State Administration of Forestry organized the competition for the 'Greening Model City'; Weihai City Forestry Bureau organized the process for applying for the title. In Weihai, the office of Greening Committee is situated in the City Forestry Bureau. Representatives from Forestry Bureau participate in the hearing meetings for the Master Plan and Weihai's Urban Green Space System Plan (Forestry Bureau, 2006).

City Greening Committee of Weihai *(Weihai shi lv hua wei yuan hui)* is a coordinating organization. It falls under the National Greening Committee. The Greening Committee coordinates, supervises and organizes general greening activities, including urban greening. In Weihai, the Greening Committee is directed by the political system. The General-Secretary of the Chinese Communist Party Committee of Weihai City (who is more powerful than the mayor) is the director of the City Greening Committee. The Committee members are the top directors of many government administrations. Its office is situated in the Forestry Bureau. The director of the Forestry Bureau is responsible for the routine activities of the Greening Committee. Every member of Greening Committee is responsible for noticing, coordinating and supervising the situation, and dealing with problems in the urban greening process. Members' opinions come to Forestry Bureau, and are then passed on to the responsible governmental unit with the request for making improvements (Forestry Bureau, 2006).

The City Greening Committee is responsible for implementing the national greening policy in the city region. One important national greening policy is the Resolution on Launching the National 'Duty-Tree-Planting Movement'. Together with the Organization Department (*zu zhi bu*) of the Chinese Communist Party Committee of Weihai City, the Greening Committee organizes the so-called 'Duty-Tree-Planting Movement' in Weihai.

The Administrative Committee of the High-tech Industry Development Zone is an extension of the government organization of the City Council. Administratively it falls directly under the City Council, but not under the control of any city bureau. ***The Construction Bureau*** of the Zone is responsible for overall urban construction**.** Its sub-division—***the Park***

Administration is responsible for greening activities and management of green spaces in the High-tech Zone. The urban construction and greening activities in the High-tech Zone are directly guided by the Administration Committee of the High-tech Zone. Therefore the City Construction Committee and the City Park Administration have no direct influence on urban construction and greening issues in the High-tech Zone. The City Construction Committee, through the professional system, has power and responsibility to make technical suggestions and supervise the construction projects in the High-tech Zone. The Park Administration of Weihai High-tech Zone has almost no connection with the City Park Administration from either administrative or professional perspectives (Liu & Sun, pers. comm.).

The Administrative Committee of the Economic Development Zone falls directly under the supervision of the City Council, as is the case for the Administrative Committee of Weihai High-tech Zone. The Administration Committee independently carries out construction and greening activities in the Economic Development Zone. However, the construction of important projects needs to be approved by the City Planning Committee and the City Council. In the Economic Development Zone, there is no special administration for greening issues. ***The Municipal Engineering Administration*** of the Zone is responsible for green projects. It has almost no connection with the City Park Administration either from an administrative, or from a professional perspective. The City Construction Committee has the power and responsibility to direct and supervise the construction in Economic Development Zone. If greening activities take place on the level of the entire city, the City Construction Committee acts as a coordinator (Lin, pers. comm.).

Local governments, politicians and administrations are also increasingly interested in greening their local areas. The local governments include Huancui District government (under the Weihai City Council), the village governments under Huancui District government, four town governments (Sunjiatan Town, Liugongdao Island, Boyu Town, and Qiaotou Town) under Weihai City Council and the town, district or village governments under the Administration Committee of the Economic Development Zone or the Administration Committee of the High-tech Zone. Local administrations are sub-divisions of the bureaus or committees that are situated in the district or town governments. They are under the leadership of both their local governments and their superior bureaus or committees. The City Forestry Bureau has the most complete sub-division network. The Park Administration and the City Planning Bureau do not have sub-divisions below the district level. In such a case, certain persons in the local governments are responsible for local greening issues (e.g. Li, pers. comm.).

Local governments and the relevant administrations or persons at district, town or village level are responsible for the greening issues in their area. On the one hand, local governments respond to and cooperate with the greening actions initiated by the governments and administrations at the higher levels. On the other hand, more and more local governments, represented by the top leaders / politicians, initiate green actions within their responsible territories. Sometimes, local governments and administrations organize large-scale plans, such as Shuangdao-Likoushang Forest Park Plan developed by Huancui District Forest Bureau and Huancui District government. In more cases, the local greening actions are at the project level—to develop local parks, squares, tourism spots and so on (e.g. Li, pers. comm.; personal observation, 2006).

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